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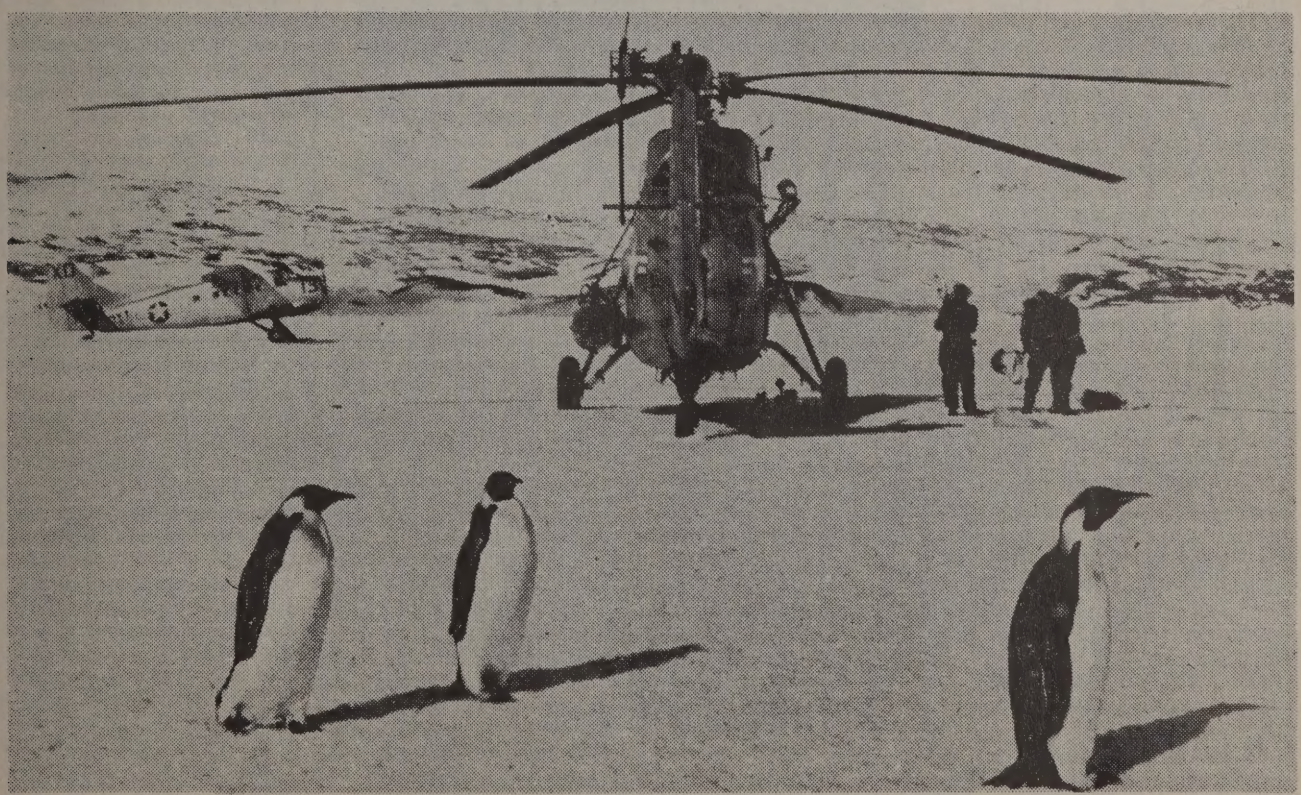
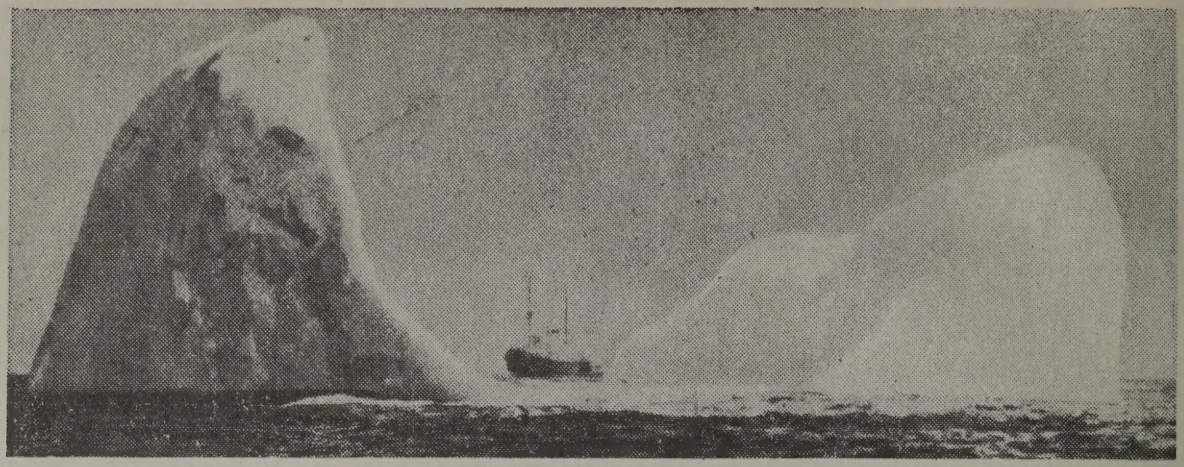
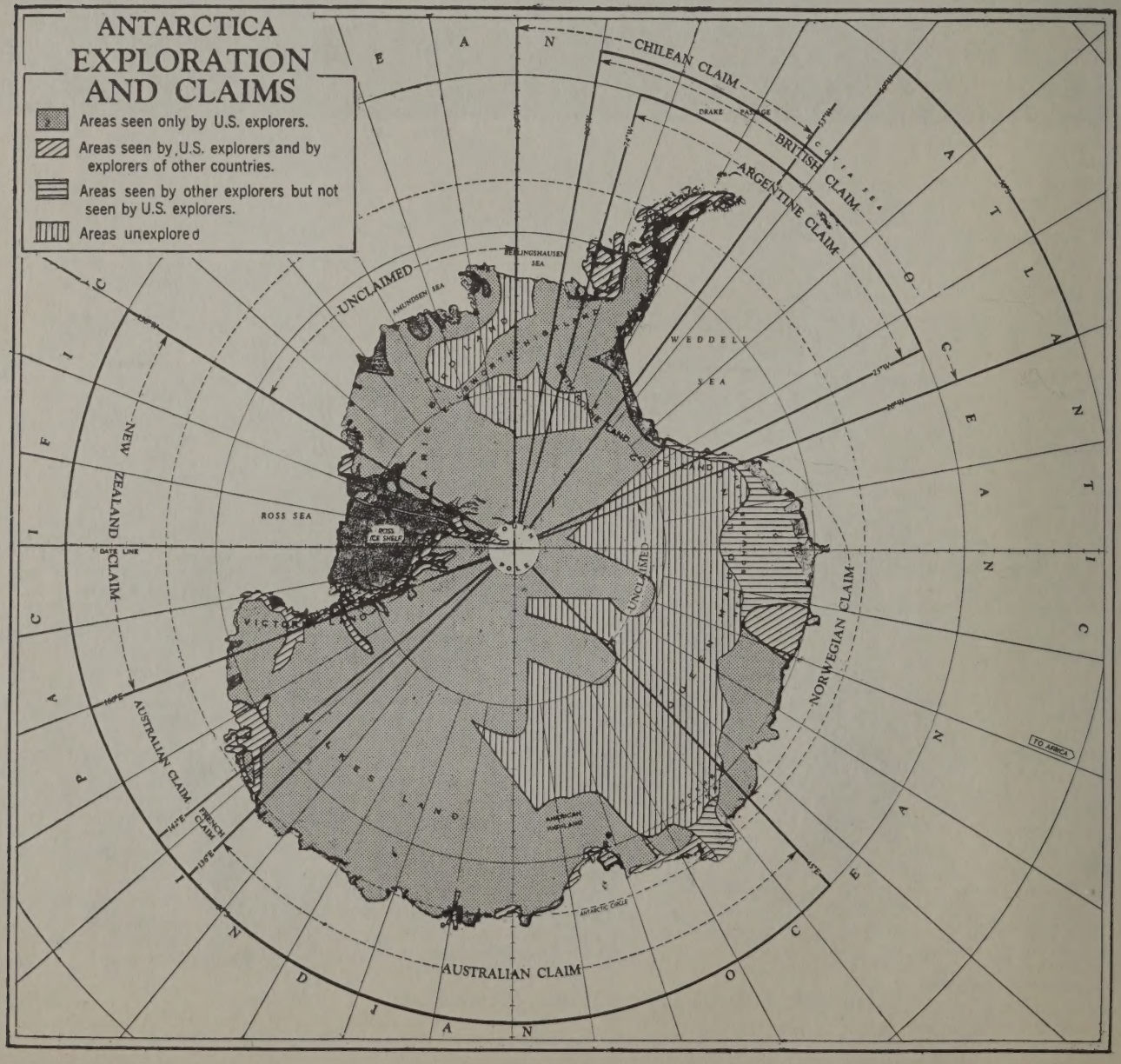
THE POLAR TIMES



United Press International

Antarctic Citizens Ignore Visitors From Distant United States




ANTARCTICA
EXPLORATION AND CLAIMS
Areas seen only by U.S. explorers.
Areas seen by U.S. explorers and by explorers of other countries.
Areas seen by other explorers but not seen by U.S. explorers.
Areas unexplored
CHILEAN CLAIM
DRAKE PASSAGE
BRITISH CLAIM
ARGENTINE CLAIM
UNCLAIMED
BELLINGSHAUSEN SEA
AMUNDSEN SEA
WEDDELL SEA
ROSS SEA
ROSS ICE SHELF
VICTORIA LAND
MARIE BYRD LAND
GRAHAM LAND
QUEEN MAUD LAND
ENDERBY LAND
PRINCESS ELIZABETH LAND
QUEEN MARY LAND
WILKES LAND
AMERICAN HIGHLAND
NEW ZEALAND CLAIM
AUSTRALIAN CLAIM
FRENCH CLAIM
NORWEGIAN CLAIM
AUSTRALIAN CLAIM
TO AFRICA
ANTARCTIC CIRCLE
PACIFIC OCEAN
INDIAN OCEAN
ATLANTIC OCEAN

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12-NATION PACT MAKES ANTARCTIC SCIENCE RESERVE

Treaty Signed in Capital Bars Military Activity—Atomic Tests Outlawed

By WALTER SULLIVAN
The New York Times.

WASHINGTON, Dec. 1—A region equal in area to Europe and the United States combined was made into a preserve for scientific research today, immune from political and military strife.

Twelve nations, including the United States and the Soviet Union, signed a treaty on Antarctica that would establish a free-wheeling inspection system markedly different from any hitherto attempted.

The treaty also revives the principle of unanimity, which was at the heart of the original United Nations concept. It fell into disrepute as "the veto" during the subsequent years of the "cold war."

President Eisenhower, in a statement, said the treaty and its guarantees "constitute a significant advance toward the goal of a peaceful world with justice."

Today's action by the twelve nations was unanimous. The treaty cannot become effective unless ratified by all of them. Likewise, the decisions of the consultative committee, which the pact creates, must be unanimous.

By an ingeniously worded article, the claims of various nations to pie slices of Antarctic territory are placed on the shelf. "Frozen" is the word favored by the conferees.

The treaty specifies that the claims by seven of the signatories are not in any way affected by the treaty. Likewise, it says that the rights of those who may believe they have a basis for claims are not diluted. But it states flatly that no new claims can be made while the treaty is in force.

Herman Phleger, representing the United States, signs a treaty to preserve antarctic continent for peaceful purposes. Paul C. Daniels (right) also signed for the United States. Secretary of State Christian Herter sits in background.

The claimants, all of whom signed the treaty, are Argentina, Australia, Britain, Chile, France, New Zealand and Norway. The other signatories were Belgium, Japan, South Africa, the Soviet Union and the United States.

The treaty also specifies that, once it comes into effect, no activity in Antarctica can be used as a basis for strengthening present or potential claims. Many hope that this will ultimately permit the claims issue to die a natural death.

Some of the claimants consider portions of Antarctica to be part of their metropolitan territory, in the same way that the French have maintained that Algeria is an integral part of their nation. This has been a hot issue in Chile and Argentina, whose Antarctic claims overlap one another and that of Britain.

Feelings have long run high in those Latin-American states, in particular because of the dispute between Argentina and Britain over the Falkland Islands. The British administer their Antarctic claim as a dependency of the Falkland Islands.

The treaty bans nuclear explosions in Antarctica and also the dumping there of radioactive wastes. This issue presented the pact in a positive light, in so far as the Latin Americans were concerned.

It is hoped that it will aid in the treaty's ratification, since there has been concern in South American and other Southern lands over suggestions that Antarctica be used as a nuclear proving ground.

The treaty establishes what amounts to an Antarctic club with two kinds of membership. It provides for associate membership in that any member of the United Nations can accede to the treaty and assume the obligations it imposes.

Nations not members of the United Nations may do so on unanimous invitation of the consultative committee. This obviously rules out, for the time being, such nations as Communist China.

Full membership in the club is enjoyed by the twelve signatories, who constitute the original members of the consultative committee, plus those later accepted on the committee. To be so accepted, and to continue as

12 COUNTRIES VOW TO BAR WARFARE FROM ANTARCTICA

Meeting in Capital Indicates Wide Area of Agreement—Soviet Union in Accord

By WALTER SULLIVAN
The New York Times.

WASHINGTON, Oct. 15—The twelve nations active in Antarctica pledged today their determination to keep that continent free of war. They indicated broad agreement on a treaty to that effect.

Statements of policy were made by chief delegates from each of the nations at the conference on Antarctica, which opened here. Among the participants are the Soviet Union and the leading Western powers.

Participating in the conference are representatives from Argentina, Australia, Belgium, Britain, Chile, France, Japan, New Zealand, Norway, the Soviet Union, the Union of South Africa and the United States.

At the opening session, in the auditorium of the Department of the Interior, they were welcomed by Christian A. Herter, Secretary of State.

He expressed the hope that the effect of the conference would be to continue the collaboration in Antarctica that had marked the International Geophysical Year of 1957-58. It was the self-sacrifice of past explorers and scientists, he said, which laid the basis for the present talks.

Herman Phleger, who until 1957 was legal adviser to the State Department, was elected chairman of the conference. Ambassador Paul C. Daniels, who served as ringmaster during the fifty-nine sessions of the working group, took his place as chief American representative.

members, nations must be taking part in the Antarctic research effort.

The treaty applies to all areas south of the Sixtieth Parallel, except those regarded as the high seas. It affects the portion of the Continental ice sheet that is afloat. Little America, for example, is on such an ice shelf.

The pact is to remain in force indefinitely and can only be modified by unanimous consent of the nations on the consultative committee. Withdrawal from the treaty is not permitted for at least thirty-four years. After thirty years any of the committee members may ask for a conference to review the treaty.

If modifications are then proposed, but within two years have not been ratified, then any nation may withdraw, effective two years from its notification to that effect.

The consultative committee is to meet in Canberra, Australia, within two months after the treaty comes into effect. Another document, the "final act" of the conference, provides that, within two months of today, there be held in Washington a meeting of an interim committee of the twelve.

The function of its members will be "to consult together and to recommend to their governments such interim arrangements regarding matters dealt with in the treaty as they may deem desirable."

After ratification, the task of the consultative committee will be to deal with all problems arising under the treaty, including facilities of inspection, preservation of wildlife, scientific cooperation and questions of jurisdiction. While each member will have a veto, this cannot halt inspections.

The article on inspection permits any of the committee members, on their own volition, to name inspectors and send them anywhere they wish at any time. They may inspect "all stations, installations and equipment" in the area, as well as ships and planes loading or unloading there. Aerial inspection is also permitted.

The signatories are obliged to "exert appropriate efforts" to see that "no one" engages in Antarctic activity contrary to the treaty. This, for example, places an obligation on the Soviet Union to see that Communist China does not conduct military exercises or atomic tests there.

The treaty provides that scientific parties may go anywhere they wish in Antarctica. But they do not have the right, accorded the inspectors, of probing into buildings, planes and ships. Each nation retains jurisdiction over its own nationals wherever they may be.

Disputes arising under the treaty are to be resolved by consultation among the contracting nations. If this is unsuccessful, there is a provision for referral to the International Court of Justice at The Hague, but only with the consent of the parties to the dispute.

The treaty was drafted, according to its preamble, in recognition of the fact "that it is in the interest of all mankind that Antarctica shall continue forever to be used exclusively for peaceful purposes and shall not become the scene or object of international discord."

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AUGUST HOWARD, Editor

THE POLAR TIMES highly recommends "The Polar Record," published by the Scott Polar Research Institute, Cambridge, England.

The American Polar Society was founded Nov. 29, 1934, to band together all persons interested in polar exploration. Membership dues are one dollar a year, which entitles members to receive THE POLAR TIMES twice a year.

Back issues are 50 cents each. Bound volumes, covering five years, are $8.00 each.

'Antarcticans' Praise Treaty

By John C. Waugh
The Christian Science Monitor
McMurdo Sound, Antarctica

Thoughtful men in Antarctica are applauding the news from Washington.

The news—that 12 nations have signed a treaty preserving this continent solely for scientific exploration and peaceful purposes—found its way to McMurdo Sound almost by chance.

News from the outside comes only sporadically to the bottom of the world. Only because somebody in the communications shack at the naval air facility here happened to be monitoring the right press channel at the right time, was news of the treaty intercepted as soon as it was.

Its terms were posted in the mess hall, where all the men sooner or later come. The reaction of those who stopped to read was a quiet "hooray." And the most heartfelt "hooray" of all came from the scientists. It is they, of course, who have the biggest stake in Antarctica's peaceful future.

Scientists interested in polar research have nowhere to go to seek their special knowledge except to polar regions. And as John Dearborn, a young biologist here from Stanford University, says: "There are only two poles."

That one of them, the largest and most enigmatic of all, has been set aside as a scientific and peaceful preserve, is important indeed to men of science.

The big Navy contingent on this continent welcomed the news, too. But the average bluejacket is not so intimately tied to this continent's destiny as are the polar scientists. He can ply his trade almost anywhere.

His job here—one he performs with great skill—has always been to support the scientists, to fly them where they must be flown, bring them the instruments they need, and build them the buildings they require.

The Navy's top man here, Rear Admiral David M. Tyree, commander of the naval support force and United States Antarctic projects officer, greeted the news of treaty with a snappy salute.

"It is a fine thing," he said, "a significant milestone in human progress. It will not change any of our operations here, since our role always has been to support science and scientific exploration. But it will permit a greater feeling of confidence to go full ahead with our scientific programs.

"The treaty, when its details are worked out, will serve as an interesting experiment indeed. If it is successful, it may set the pattern later for the peaceful and scientific control of outer space."

To George R. Toney the best news of all is that the treaty nations have been urged to share their scientific findings in Antarctica.

Mr. Toney, as the representative here of the United States Antarctic Research Program, coordinates the American scientific work on this continent.

During the International Geophysical Year, ended in 1958, and the International Geophysical Cooperation for 1959, which is about to end, the nations have deposited their worldwide scientific harvest in three world data collection centers, where it has been made available to scientists of all nations. But there is no provision yet for such a central depository beyond this year.

"The treaty," says Mr. Toney, "is a hopeful sign that such a mechanism—an Antarctic data center, perhaps—will be established."

Some scientists here from the various university staffs believe the treaty may produce a shift of emphasis in the United States scientific program.

One young university scientist puts it this way:

"In the past the biggest share of Antarctic research money has gone to government research agencies—notably the United States Weather Bureau. I look for this to change now. I believe we will see more and more money being channeled into university-sponsored projects."

Up to now, this scientist says, the National Science Foundation, which runs the Antarctic program, has felt obliged to keep the government itself deeply involved in Antarctic research because of the uncertainty of the continent's future. Now, he says, the NSF will feel free to move away from this policy and, indeed, will.

Perhaps Mr. Dearborn, down among the marine life-specimens he fishes each day from under the Antarctic ice, put the general reaction to the treaty best of all.

"It guarantees that Antarctica will remain a community of knowledge rather than a community of weapons," he said, thoughtfully. "And it assures an uninterrupted scientific effort. We now know that the money spent here in research will be a lasting investment, that we will not awake some morning to find a fence up with a sign reading, 'Restricted Area: Keep Out!'"

American Polar Society

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Text of Signed Treaty on the Antarctic

The New York Times.

WASHINGTON, Dec. 1—Following is the text of the Antarctic treaty signed here today:

The Governments of Argentina, Australia, Belgium, Chile, the French Republic, Japan, New Zealand, Norway, the Union of South Africa, the Union of Soviet Socialist Republics, the United Kingdom of Great Britain and Northern Ireland, and the United States of America,

Recognizing that it is in the interest of all mankind that Antarctica shall continue forever to be used exclusively for peaceful purposes and shall not become the scene or object of international discord;

Acknowledging the substantial contributions to scientific knowledge resulting from international cooperation in scientific investigation in Antarctica;

Convinced that the establishment of a firm foundation for the continuation and development of such cooperation on the basis of freedom of scientific investigation in Antarctica as applied during the International Geophysical Year accords with the interests of science and the progress of all mankind;

Convinced also that a treaty ensuring the use of Antarctica for peaceful purposes only and the continuance of international harmony in Antarctica will further the purposes and principles embodied in the charter of the United Nations;

Have agreed as follows:

Article I

1. Antarctica shall be used for peaceful purposes only. There shall be prohibited, *inter alia*, any measure of a military nature, such as the establishment of military bases and fortifications, the carrying out of military maneuvers, as well as the testing of any type of weapons.

2. The present treaty shall not prevent the use of military personnel or equipment for scientific research or for any other peaceful purpose.

Article II

Freedom of scientific investigation in Antarctica and cooperation toward that end, as applied during the International Geophysical Year, shall continue, subject to the provisions of the present treaty.

Article III

1. In order to promote international cooperation in scientific investigation in Antarctica, as provided for in Article II of the present treaty, the contracting parties agree that, to the greatest extent feasible and practicable:

(A) Information regarding plans for scientific programs in Antarctica shall be exchanged to permit maximum economy and efficiency of operations;

(B) Scientific personnel shall be exchanged in Antarctica between expeditions and stations;

(C) Scientific observations and results from Antarctica shall be exchanged and made freely available.

2. In implementing this article, every encouragement shall be given to the establishment of cooperative working relations with those specialized agencies of the United Nations and other international organizations having a scientific or technical interest in Antarctica.

Article IV

1. Nothing contained in the present treaty shall be interpreted as:

(A) A renunciation by any contracting party of previously asserted rights of or claims to territorial sovereignty in Antarctica;

(B) A renunciation or diminution by any contracting party of any basis of claim to territorial sovereignty in Antarctica which it may have whether as a result of its activities or those of its nationals in Antarctica, or otherwise;

(C) Prejudicing the position of any contracting party as regards its recognition or nonrecognition of any other state's right of or claim or basis of claim to territorial sovereignty in Antarctica.

2. No acts or activities taking place while the present treaty is in force shall constitute a basis for asserting, supporting or denying a claim to territorial sovereignty in Antarctica or create any rights of sovereignty in Antarctica. No new claim, or enlargement of an existing claim, to territorial sovereignty in Antarctica shall be asserted while the present treaty is in force.

Article V

1. Any nuclear explosions in Antarctica and the disposal there of radioactive waste material shall be prohibited.

2. In the event of the conclusion of international agreements concerning the use of nuclear energy, including nuclear explosions and the disposal of radioactive waste material, to which all of the contracting parties whose representatives are entitled to participate in the meetings provided for under Article IX are parties, the rules established under such agreements shall apply in Antarctica.

Article VI

The provisions of the present treaty shall apply to the area south of 60 Degrees South Latitude, including all ice shelves, but nothing in the present treaty shall prejudice or in any way affect the rights, or the exercise of the rights, of any state under international law with regard to the high seas within that area.

Article VII

1. In order to promote the objectives and ensure the observance of the provisions of the present treaty, each contracting party whose representatives are entitled to participate in the meetings referred to in Article IX of the treaty shall have the right to designate observers to carry out any inspection provided for by the present article. Observers shall be nationals of the contracting parties which designate them. The names of observers shall be communicated to every other contracting party having the right to designate observers and like notice shall be given of the termination of their appointment.

2. Each observer designated in accordance with the provisions of Paragraph 1 of this article shall have complete freedom of access at any time to any or all areas of Antarctica.

3. All areas of Antarctica, including all stations, installations and equipment within those areas, and all ships and aircraft at points of discharging or embarking cargoes or personnel in Antarctica, shall be open at all times to inspection by any observers designated in accordance with Paragraph 1 of this article.

4. Aerial observation may be carried out at any time over any or all areas of Antarctica by any of the contracting parties having the right to designate observers

5. Each contracting party shall, at the time when the present treaty enters into force for it, inform the other contracting parties, and thereafter shall give them notice in advance, of

(a) All expeditions to and within Antarctica, on the part of its ships or nationals and all expeditions to Antarctica organized in or proceeding from its territory;

(b) All stations in Antarctica occupied by its nationals; and

(c) Any military personnel or equipment intended to be introduced by it into Antarctica subject to the conditions prescribed in Paragraph 2 of Article 1 of the present treaty.

Article VIII

1. In order to facilitate the exercise of their functions under the present treaty, and without prejudice to the respective positions of the contracting parties relating to jurisdiction over all other persons in Antarctica, observers designed under Paragraph 1 of Article VII and scientific personnel exchanged under Subparagraph 1 (B) of Article III of the treaty, and members of the staffs accompanying any such persons, shall be subject only to the jurisdiction of the contracting party of which they are nationals in respect of all acts

POLAR GROUP HAILS ANTARCTICA PARLEY

WASHINGTON, Oct. 23 (AP)—Good wishes have come from Antarctica for the success of a twelve-nation conference negotiating here on a treaty to bar military activities from that area.

Seventeen United States Navy men and scientists radioed Secretary of State Christian A. Herter that they were "heartened by the initiation of treaty discussions for maintaining the white continent as a place of peaceful and cooperative scientific research."

Meanwhile, the National Science Foundation awarded a total of $651,770 today to institutions studying the Antarctic.

WASHINGTON, Oct. 13—Delegates to the conference, announced today by the State Department, are:

Norway — Ambassador Paul Koht.

Union of South Africa—Mr. Louw.

Soviet Union—First Deputy Minister for Foreign Affairs V. V. Kuznetsov.

Britain—Sir Esler Dening.

United States — Herman Phleger.

Argentina — Adolfo Scilingo, special adviser to the President of Argentina.

Australia—Mr. Casey.

Belgium—Viscount Aubert de Thieusies.

Chile—Marcial Mora, member of the Chilean Senate.

France—Pierre Charpentier.

Japan—Ambassador Koichiro Asakai.

New Zealand—Mr. Nash.

or omissions occurring while they are in Antarctica for the purpose of exercising their functions.

2. Without prejudice to the provisions of Paragraph 1 of this article, and pending the adoption of measures in pursuance of Subparagraph 1 (E) of Article IX, the contracting parties concerned in any case of dispute with regard to the exercise of jurisdiction in Antarctica shall immediately consult together with a view to reaching a mutually acceptable solution.

Article IX

1. Representatives of the contracting parties named in the preamble to the present treaty shall meet at the city of Canberra within two months after the date of entry into force of the treaty, and thereafter at suitable intervals and places, for the purpose of exchanging information, consulting together on matters of common interest pertaining to Antractica, and formulating and considering, and recommending to their governments, measures in furtherance of the principles and objectives of the treaty, including measures regarding:

(A) Use of Antarctica for peaceful purposes only;

(B) Facilitation of scientific research in Antarctica;

(C) Facilitation of international scientific cooperation in Antarctica;

(D) Facilitation of the exercise of the rights of inspection provided for in Article VII of the treaty;

(E) Questions relating to the exercise of jurisdiction in Antarctica;

(F) Preservation and conservation of living resources in Antarctica.

2. Each contracting party which has become a party to the present treaty by accession under Article XIII shall be entitled to appoint representatives to participate in the meetings referred to in Paragraph 1 of the present article, during such time as that contracting party demonstrates its interest in Antarctica by conducting substantial scientific research activity there, such as the establishment of a scientific station or the dispatch of a scientific expedition.

3. Reports from the observers referred to in Article VII of the present treaty shall be transmitted to the representatives of the contracting parties participating in the meetings referred to in Paragraph 1 of the present article.

4. The measures referred to in Paragraph 1 of this article shall become effective when approved by all the contracting parties whose representatives were entitled to participate in the meetings held to consider those measures.

5. Any or all of the rights established in the present treaty may be exercised as from the date of entry into force of the treaty whether or not any measures facilitating the exercise of such rights have been proposed, considered or approved as provided in this article.

Article X

Each of the contracting parties undertakes to exert appropriate efforts, consistent with the Charter of the United Nations, to the end that no one engages in any activity in Antarctica contrary to the principles or purposes of the present treaty.

Article XI

1. If any dispute arises between two or more of the contracting parties concerning the interpretation or application of the present treaty, those contracting parties shall consult among themselves with a view to having the dispute resolved by negotiation, inquiry, mediation, conciliation, arbitration, judicial settlement or other peaceful means of their own choice.

2. Any dispute of this character not so resolved shall, with the consent, in each case, of all parties to the dispute, be referred to the International Court of Justice for settlement; but failure to reach agreement on reference to the International Court shall not absolve parties to the dispute from the responsibility of continuing to seek to resolve it by any of the various peaceful means referred to in Paragraph 1 of this article.

Article XII

1. (A) The present treaty may be modified or amended at any time by unanimous agreement of the contracting parties whose representatives are entitled to participate in the meeting provited for under Article IX. Any such modification or amendment shall enter into force when the depositary government has received notice from all such contracting parties that they have ratified it.

(B) Such modification or amendment shall thereafter enter into force as to any other contracting party when notice of ratification by it has been received by the depositary government. Any such contracting party from which no notice of ratification is received within a period of two years from the date of entry into force of the modification or amendment in accordance with the provisions of Subparagraph 8 (A) of this article shall be deemed to have withdrawn from the present treaty on the date of the expiration of such period.

2. (A) If after the expiration of thirty years from the date of entry into force of the present treaty, any of the contracting parties whose representatives are entitled to participate in the meetings provided for under Article IX so requests by a communication addressed to the depositary government, a conference of all the contracting parties shall be held as soon as practicable to review the operation of the treaty.

(B) Any modification or amendment to the present treaty which is approved at such a conference by a majority of the contracting parties there represented including a majority of those whose representatives are entitled to participate in the meetings provided for under Article IX, shall be communicated by the depositary government to all the contracting parties immediately after the termination of the conference and shall enter into force in accordance with the provisions of Paragraph 1 of the present article.

(C) If any such modification or amendment has not entered into force in accordance with the provisions of Subparagraph 1 (A) of this article within a period of two years after the date of its communication to all the contracting parties, any contracting party may at any time after the expiration of that period give notice to the depositary government of its withdrawal from the present treaty; and such withdrawal shall take effect two years after the receipt of the notice by the depositary government.

Article XIII

1. The present treaty shall be subject to ratification by the signatory states. It shall be open for accession by any state which is a member of the United Nations, or by any other state which may be invited to accede to the treaty with the consent of all the contracting parties whose representatives are entitled to participate in the meetings provided for under Article IX of the treaty.

2. Ratification of or accession to the present treaty shall be effected by each state in accordance with its constitutional processes.

3. Instruments of ratification and instruments of accession shall be deposited with the Government of the United States of America, hereby designated as the depositary government.

4. The depositary government shall inform all signatory and acceding states of the date of each deposit of an instrument of ratification or accession, and the date of entry into force of the treaty and of any modification or amendment thereto.

5. Upon the deposit of instruments of ratification by all the signatory states, the present treaty shall enter into force for those states and for states which have deposited instruments of accession. Thereafter the treaty shall enter into force for any acceding state upon the deposit of its instrument of accession.

6. The present treaty shall be registered by the depositary government pursuant to Article 102 of the Charter of the United Nations.

Article XIV

The present treaty, done in the English, French, Russian and Spanish languages, each version being equally authentic, shall be deposited in the archives of the Government of the United States of America, which shall transmit duly certified copies thereof to the governments of the signatory and acceding states.

Antarctic Is Suggested As Icebox for World

BUFFALO, Dec. 1 (AP)—A Roman Catholic priest who was a member of the Navy's Antarctic expedition in 1955 said today that the world could meet its expected population boom by cultivating all available land and storing surplus food in the Antarctic ice.

The Rev. Daniel Linehan, a Jesuit, director of Boston College's Geophysics Department, said that when he was in the Antarctic he had eaten bread left by an expedition fifty years earlier.

"It was a little dry," he said, "but otherwise it tasted fine."

Father Linehan was among a team of geophysicists who helped the Navy to map the Ross Ice Shelf in 1955. His talk was the first of two lectures marking the fiftieth anniversary of the seismological station at Canisius College here.

POLAR FISH STUDIED

U. S. Scientists Are Collecting Specimens in Antarctic

WASHINGTON (Science Service)—Spotlights and explosives are requisites for biological research at the bottom of the world.

Scientists at the United States Antarctic Biological Research Laboratory on Ross Island, McMurdo Sound, are collecting fish and marine invertebrates by spotlights through holes blasted in the Antarctic ice.

Antarctic High

Average elevation of the Antarctic continent is more than a mile above sea level, the highest in the world.

ANTARCTIC PACT GREW FROM I.G.Y.

Earlier U.S. Efforts on Pact Were Rebuffed — Shots Fired in 1948 Crisis

The New York Times.

WASHINGTON, Dec. 1—The Antarctic treaty signed here today culminates a dozen years marked, at times, by naval demonstrations, some gunfire and repeated negotiations.

It is designed to bring peace of mind, particularly, to those nations that list Antarctica among their nearest overseas neighbors. Ever since the Russians became active in Antarctica, the Australians have been worried about possible missile sites on the frozen continent.

In Chile, Argentina, New Zealand and South Africa, as well as Australia, reports that the great powers might carry out nuclear tests near the South Pole produced alarm.

Antarctica is the breeding ground for much of their weather, and it was feared that winds from that region might carry damaging radio-active fall-out.

The treaty outlaws all military activity, including nuclear explosions of any sort.

The hottest crisis was that of 1947-48, when Chile and Argentina sought to affirm their claims to the Palmer Peninsula over that of Britain. Argentina sent a naval squadron and a detachment of mountain troops to cover the establishment of a base alongside that of the British on Deception Island.

A cry for help from the small British party brought a cruiser of the Royal Navy at full draft, but the Argentine cruisers and destroyers departed just before it arrived.

Argentines at Hope Bay fired a machine-gun as a British party sought to land there, but after heated protests the landing was completed and the parties lived peaceably side by side.

It was this crisis that led to the first public proposal by the United States for an international solution. It was addressed, in 1948, to the seven nations claiming Antarctic territory. The Soviet Union, which, like the United States, had made no claim, was not consulted. It immediately protested its omission and said it would not recognize any settlement to which it was not a party.

The claimants were unenthusiastic and the proposal was shelved.

It was the International Geophysical Year of 1957-58 that set the stage for the treaty signed today. Its planners allocated a number of South Polar stations to nations taking part, including the United States and the Soviet Union.

There was a broad degree of cooperation among expeditions, but, nevertheless, there were real fears in Australia.

When Secretary of State John Foster Dulles visited there early in 1957, he was urged to take some sort of action. When Prime Minister Harold R. Macmillan of Britain made a similar visit a year later, he likewise was told of Australian fears and publicly proposed internationalization of the continent.

This produced a strongly negative reaction in Chile and Argentina. Meanwhile, however, Paul C. Daniels, who had spent virtually all of his foreign service career dealing with Latin-American problems, was called in by Mr. Dulles to formulate an Antarctic policy.

The result was the American proposal of May 2, 1958, for the treaty that was signed today.

The plan contained what proved to be the key to the question. This was a procedure that did not require those making claims to abandon them.

CHECKING—An Adelie penguin seems to be counting those eggs as he carefully scrutinizes his rocky nest on the shore of McMurdo Sound, Antarctica. The Adelies are smaller than Emperor penguins and build their nests in the summer, while the others prefer the winter.

Walrus Friendly

The walrus, whose deadly tusks extend as much as 2 feet, is really an affectionate animal. It is a friendly mammal allied to seals.

Two Brothers Contact South Pole From Rutgers Dormitory

NEW BRUNSWICK, N. J. Two brothers who received wide acclaim last year for their ham radio operating exploits in connection with "Operation Deepfreeze" in the Antarctic have established a "first" at Rutgers University.

The two, Julius, 19, and John Madey, 16, of 1037 Raritan Rd., Clark, operating their own transmitter again have contacted the South Pole — this time from a Rutgers dormitory

An interested observer of the Madey brothers' technique at Rutgers is Dr. Matthew J. Brennan, who has taught at the state university's summer science program for elementary teachers since 1953. Brennan was one of the Madey's first South Pole contacts last year when the youngsters gained international recognition.

A station scientific leader with IGY expedition to the Antarctic, Brennan said "it was a rare day" when he was not in contact with either Julius or John.

"They were great morale boosters and often were our only contact with the outside world."

The Madey brothers, who have enough equipment at home for three radio stations, have performed many invaluable services for the men in Antarctica. By use of phone "patches" they were able to let the explorers talk to their families in the states. And with a facsimile machine they also transmitted photographs of newly born babies to the fathers in the expedition.

Their longest call covered about 16,000 miles. This came about when Brennan informed them that he wanted to call Alexandria, Egypt, from the South Pole. The boys promptly fixed a phone "patch" and put the call through.

What has been their biggest thrill? Julius said that would be their contact with Dr. Vivian Fuchs at the South Pole on request from the British Broadcasting Corp., which had been unable to reach the famous explorer.

BBC Director General Sir Ian Jacobs cabled his congratulations to the young ham operator.

The Madey brothers both became interested in radio at an early age. Julius built his first tube outfit at the age of 8.

ESKIMOS BOLSTER ALASKA DEFENSES

1,050 Resourceful Scouts Patrol Vast Coastline for National Guard

By BILL BECKER
The New York Times.

NOME, Alaska, Aug. 15 — Here, where the United States almost touches the Soviet Union, America's first line of defense is the Eskimo scout.

The 1,050 Eskimo scouts along the Bering, Cukchi and Arctic Seas help to fill the chinks in the vast Alaskan coast defense network. They also form the backbone of Alaska's National Guard.

These easy-going but eager natives are, in the words of one of their officers, "full-time soldiers on part-time pay."

Yet Eskimo enthusiasm is so high that the guard has detachments in fifty-seven villages and towns in western and northern Alaska.

The scouts provide an intelligence force that is unusual in the present continental defense system.

In recent years they have spotted Soviet submarines, picked up radioactive debris to substantiate Soviet nuclear blasts in Siberia, and reported planes that missed radar screens.

The Army is now striving to give the Eskimo the military know-how to go with his native shrewdness. About one-third of the scouts have received active duty training at Fort Richardson, Anchorage, or Fort Ord, Calif.

A group of 150 has just been selected for a six-month program at Fort Ord, starting in November.

"The Eskimos have been so proficient," says Brig. Gen. Thomas Carroll, Alaska Adjutant General, "that the original training program set up for them is no longer advanced enough to present a challenge."

To step up their training, the Army this week gave scouts of the guard's First Battalion a part in Ninth Infantry maneuvers at Nome. In a reconnaissance test, the Eskimos succeeded in infiltrating regular Army lines.

Their spirit impressed their new Army adviser, Capt. Lawrence M. Flanagan of Dayton, Wash. Their adaptability and disregard of personal comfort, he feels, gives them a head-start in guerrilla warfare.

With sharper training techniques, the efficiency of the Eskimo battalions will approach Army combat standards, Captain Flanagan, an infantry ranger, says.

DEW DANCE—Eskimo youngsters Dorothy Kalanik and Dave Hichock imitate their elders and try to trip the light fantastic as well as they can in their bulky footwear at a dance in Cape Parry, Alaska. The dance was held at the Pin Main Station on the 3,000-mile Distant Early Warning (DEW) radar line that spans Canada and Alaska.

Capt. James E. O'Rourke commands the First Battalion, which has 540 enlisted men and fifteen officers.

A World War II company commander, Captain O'Rourke has lived in Alaska since the war and has high regard for the Eskimo as a soldier.

"As soon as they know what you want done, it'll get done," he says. "I'd like to have had men like them in the regular Army."

The First Scout Battalion with headquarters in Nome, is responsible for guarding 2,400 miles of coast in an area as big as Texas.

It has detachments as far out as Little Diomede Island in the Bering Strait, two and a half miles from Siberia, and St. Lawrence Island.

The Second Battalion, headquartered at Bethel, covers southwestern Alaska with 510 enlisted Eskimo men and fifteen officers.

The guard's battle group, containing fewer Eskimos, is based at Anchorage and has about 1,000 men in all.

Eskimo scouts were first trained when the Army established the territorial home guards shortly after Pearl Harbor.

Several of the original scouts are still active. Enlistment is for three years, but many scouts have steadily re-enlisted.

They range in age from 18 to 45 years. The smallest detachment numbers seven men, the largest eighty, at the northern outpost of Barrow.

Scouts are obligated to take forty-eight two-hour drills a year. They draw anywhere from $3 to $10 per drill, depending on rank. That, for some, is a primary source of income.

Many of the scouts are community leaders. Sgt. Charles Guest of Kasigluk, a guardsman for six years, also holds the distinction of being the first Eskimo priest in the Russian Orthodox Catholic Church in Alaska.

The 44-year-old scout-priest serves sixteen parishes in southwestern Alaska, using dog team, walrus-skin boat, and bush plane. He gives services in Eskimo, English or Russian.

What prompted him to become a scout? Father Guest, who has seven children, puts it simply:

"America is my country. I want my children and their children to be raised the American way; to be free to worship as they please, to speak as they please."

A statistical survey probably would show that this is not an inconsiderable factor in Eskimo recruitment. Eskimo families of nine or more children are almost commonplace.

A Long Northern Highway

The Alaska Highway, constructed in 1942-43 from Dawson Creek, B. C., to Fairbanks, Alaska, covers 1,523 miles.

Cold Eskimo Appeals For Gas From U. S. Pipe

BARROW, Alaska, Dec. 3 (AP).—Let us use some of this Arctic land's plentiful natural gas, Eskimos ask.

Government offices, agencies and homes in this most Northern United States town, on the Arctic Ocean, burn it for heat and light, State Senator Eben Hopson wrote President Eisenhower.

But his repeated appeals, and those of other Alaskans, to Government agencies have been turned down cold in this land of months of winter darkness and cold, his letter to the White House said. He is an Eskimo and father of eight children.

"Going right by my own home is a large gas pipe which supplies gas to nearby Federal offices," the Democratic legislator wrote.

"However, my family and all the other natives in Barrow are forbidden from tapping into this, or any other pipeline."

Coal costs $42 a ton here. The population of about 1,300 is 5-to-1 Eskimo. There is enough natural gas to "supply a city of many thousands for many hundreds of year," Mr. Hopson wrote. "All my village friends and relatives have inadequate heating . . . with a cold six to eight months ahead."

He has been advised the question is now "in the hands of the Joint Chiefs of Staff, and as a result, I am unable to go any further."

"If you, as President of the United States, can help my people who are poor and in desperate need of inexpensive fuel, we will be forever grateful."

His letter was mailed November 23. He has had no reply.

The Government created a naval petroleum reserve in this area years ago.

U. S. Jet Fighters Cross North Pole First Time

FAIRBANKS, Alaska, Aug. 7 (AP)—Two United States Air Force F-100-F planes landed at Eielson Air Force Base today after a 5,405-mile flight from England, the first by jet fighter aircraft over the North Pole.

The first plane set down here at 1:30 P. M. The second arrived a minute later. The flight from Wethersfield, England, took 9 hours 37 minutes.

The pilots, Charles F. Blair of Stamford, Conn., an Air Force consultant, and Capt. Robert Titus, Norfolk, Va., were greeted by Col. Stephen Henry, Eielson commander.

Before the flight the Air Force said the project, called Julius Caesar, was to check development routes for fighter planes and to test the supersonic F-100-F's automatic navigational system over the Arctic.

Sun Flare Space Peril Found Above Arctic

By RENNIE TAYLOR
Associated Press Staff Writer

BERKELEY, Calif., Oct. 15—Another potentially deadly radiation hazard for space travelers was reported today by researchers who sampled the upper air of the Arctic region with instrument-carrying balloons.

During periods of solar flares the investigators found that the top of the earth's atmosphere near the polar region was showered with stupendous bursts of cosmic rays.

The cosmic radiation during these intervals was 10,000 to 100,000 times normal, said Dr. Robert A. Brown, physicist, and Ray D'Arcy, graduate student, of the University of California.

Dr. Brown made his report after returning here from College, Alaska, where the balloon flights were made. Cosmic rays are more intense in the polar areas than in other regions because they encounter less interference there from the earth's magnetic field.

The experimenters got their first showing of a cosmic ray storm by putting up a balloon immediately after the University of Alaska detected a solar flare. A solar flare is a sudden brightening of the solar surface in the vicinity of a sunspot.

Ten hours later the balloon instruments recorded the beginning of the cosmic ray storm. The number of rays increased for 24 hours, then decreased slowly over a period of about four days.

Cosmic rays are essentially protons or cores of hydrogen atoms traveling almost as fast as light and with energies in the billions of volts. When they hit nitrogen atoms in the air they produce high energy X-rays and other phenomena. The investigators noted a simultaneous increase in X-rays.

A few days later there was another solar flare and another cosmic ray storm. As Dr. Brown and Mr. D'Arcy were preparing to leave Alaska there was still another.

During all these storms there was no increase in cosmic rays activity below the 50,000-foot level. Dr. Brown said there have been only five recorded instances of a detectable increase in radiation at the earth's surface due to solar activity.

But if, as Dr. Brown's observations indicate, these storms can occur every time there is a solar flare, then they are likely to constitute a life hazard for space travelers.

Aleutian Island Gets Caribou

Science Service.

WASHINGTON, Oct. 24.—The U.S. Marines have landed on Adak Island in the Aleutians.

With them they brought caribou — the second installment of the first recorded caribou transplant. Now the caribou have plenty of food and cover in their new home, and Armed Forces stationed on Adak Island have an emergency food supply plus recreational hunting.

The transplanting operation in 1958 and this summer was the result of cooperation between the Air Force, which supplied the helicopters for catching the young animals, the Navy, which supplied the air transportation, and the Marines. The Marines have cared for the caribou calves until they were able to take care of themselves.

The Department of the Interior's Bureau of Sport Fisheries and Wildlife supervised the project and supplied the scientific "know-how."

Nine caribou are definitely known to have survived from 1958 test transplant. Fifteen of the animals brought in this summer are expected to be able to take care of themselves.

Geographical Society Elects

The American Geographical Society has elected Walter Sullivan to its council. Mr. Sullivan, a member of The New York Times news staff since 1939, visited Antarctica with American and British expeditions in 1946-47, in 1953-54 and in 1956-57. In 1956 he was put in charge of the newspaper's special coverage of the International Geophysical Year. He is the author of "Quest for a Continent," the story of the exploration of Antarctica until 1956, and "White Land of Adventure."

DR. ROBERT F. GRIGGS

ALASKAN PEAK RENAMED

Dr. Robert F. Griggs Honored for Early Expeditions

The New York Times.

WASHINGTON, July 18—Alaska's 7,600-foot Knife Peak, the highest of the Katmai National Monument, has been named for its explorer, Dr. Robert F. Griggs.

The United States Board on Geographic Names has approved changing the name to Mount Griggs. Dr. Griggs is a former George Washington University botanist who led six National Geographic Society expeditions to Katmai forty years ago. Now 77 years old, he teaches at the University of Pittsburgh.

The Katmai National Monument was created in 1918. A volcanic wilderness covering 2,697,590 acres of southern Alaska's Aleutian Range, it is more than twice the size of Delaware.

The honor for Dr. Griggs followed a suggestion by Dr. Gilbert Grosvenor, chairman of the National Geographic Society board of trustees and editor of its magazine for fifty-five years.

Amundsen in Arctic

Capt. Roald Amundsen commanded the first ship to pass from sea to sea in the Arctic when he navigated the northwest passage in 1903-1906.

Alaskan Peak High

The highest mountain peak in North America is Alaska's 20,320-foot Mount McKinley.

LESSON IN PLANT LIFE

Learned in Alaskan Valley Once Desolated by Volcano

WASHINGTON (Science Service)—How the earth's plant life grew and developed may be revealed in the regrowth of plant life in an Alaskan valley where a volcanic eruption had destroyed all trace of life.

About fifty years ago the Valley of Ten Thousand Smokes was covered completely with debris and hot ashes by one of history's greatest volcanic eruptions. Every trace of life was destroyed. An area was thus created that was considered quite comparable to the ancient surface of the earth before the most primitive forms of plant life first appeared.

A report on how plant life started to reassert itself amid smoking desolation, and how it has developed during the interim years, has just been published by the Smithsonian Institution here.

SARGO GOING TO ARCTIC

Atom Submarine Will Make Bering 'Ice Exploration'

WASHINGTON, Nov. 2 (UPI)—The Navy will send a nuclear submarine and an icebreaker through the Bering Strait into the Arctic basin on a scientific expedition early next year.

An "ice exploration" will be carried out in the Bering and Chuckchi Seas, which are joined by the strait running between Alaska and Siberia, the Navy said tonight.

The submarine designated for the cruise is the Sargo, which was commissioned in October, 1958. She will accompany the icebreaker Station Island.

Two United States atomic submarines have explored under the north polar ice—the Nautilus and the Skate.

Igloos Are Warm

NOME, Alaska—Igloos protect against cold so well that Eskimos often wear summer clothing inside them. Instead, of cooling the igloo, the ice—like ice inside a window pane—act as an insulator.

Alaskan Glaciers

Glaciers cover 18,000 square miles of Alaska's total area of 586,400 square miles.

35 Arctic Plants Known as Edible

NEW YORK—There are more than 35 edible plants growing beyond the northern limit of trees, according to an article, in Arctic, journal of the Arctic Institute of North America. These plants bear such picturesque names as arctic fernweed, sweet coltsfoot, alpine bistort, and march fleabane. Only a few plants in the northern forest are known to be poisonous and no truly arctic plant is dangerous to humans.

CANADA IN RACE TO SAVE CARIBOU

Pillar of Eskimos Economy Faces Extinction Unless Slaughter Is Curbed

By WALTER SULLIVAN
The New York Times.

The barren-ground caribou, pillar of the traditional Arctic economy and backbone of Santa Claus' transport, is rapidly sinking toward extinction.

Whether or not it will reach that point will be decided within the next three to five years, in the view of W. E. Stevens, chief mammalogist of the Canadian Wildlife Service. In an exchange of letters with The New York Times he reports:

"We now have fewer than 200,000 caribou in that vast region of the central mainland barren-grounds, and in most of the last ten years we know that the human kill alone has exceeded the annual increment." In addition there are losses from wolves, drowning and disease.

The mortality, in 1949, was put at 178,000, of which 50,000 were killed by Indians, 30,000 by Eskimos, and 20,000 by trappers and hunters.

The decline has been precipitous, and to some extent mysterious. Estimates of the caribou population before the northward march of civilization have run as high as 100,000,000.

A more conservative guess by a Canadian scientist put the figure at 2,500,000 in the barrens between Hudson Bay and the Mackenzie Valley.

The number of animals in this region was estimated in 1949 to be 670,000, based on a government survey. A new eighteen-month study was completed a year ago with a concentrated search for the cause of the decline.

Detailed results are to be published shortly, but the preliminary report furnished by Mr. Stevens is somewhat pessimistic.

The migrating barren-land caribou once supported an inland population known as the Caribou Eskimos.

These animals, whose European form is the reindeer, provided hides for sleeping robes and winter clothing.

Also, from this animal, the Eskimos obtained the black sinews for thread, fat for lamp fuel and antlers for tool handles.

During the last few winters village after village has faced disaster when the herds failed to appear on the traditional migration routes.

The Canadian Government repeatedly had to evacuate entire communities by air. Despite these efforts about fifteen Eskimos starved to death during the winter of 1958.

Now, according to Mr. Stevens, virtually all the inland Eskimos have been moved to coastal areas, where they can depend on fish, seal and other marine products. Possibly the only group still inland is that south of Bathurst Inlet, near Contwoyto Lake.

A few winters ago the Contwoyto Eskimos were themselves nearly wiped out when the autumn migration failed to appear.

Many of their dogs starved during the winter and the Eskimos themselves might have done so, had they not killed the rare musk oxen, whose hunting is forbidden.

Part of the trouble, according to the Canadians, arises from the deeply rooted Eskimo tradition of killing every caribou that comes within range. This was logical, they say, in the days of vast herds and primitive weapons.

Now the Eskimos have repeating rifles. Likewise, when armed with spears in kayaks, they can annihilate a small herd as it swims one of the countless waterways of the Arctic.

The Canadian government has undertaken an intensive educational campaign to sell conservation to the native population. Booklets have been printed in Eskimo for that purpose.

Because of treaties with the Eskimos, the government cannot forbid them to hunt caribou. It must persuade.

Milder springs in the last few years have enabled a larger proportion of the new-born calves to survive than in previous years, and some believe that, if this continues, it may reverse the downward trend.

P. A. Gregg, game biologist in Saskatchewan, notes, in a recent article on the subject, that the loss of the caribou would be more than an economic one.

"Masses of migrating caribou pouring by the thousands across the undulating barrens are a sight not soon forgotten by the person fortunate enough to witness this spectacle. If the great herds pass off the scene, the loss will not be measurable in dollars alone," he wrote.

The New York Times Nov. 22, 1959

VANISHING CARIBOU: As caribou disappear from last-known areas (shown in black), Eskimos dependent on them drift to the coastal areas. Possibly only group of Eskimos remaining inland are at Contwoyto Lake (arrow).

YOUNG MEN GO NORTH

18 Britons Accept Posts at Hudson's Bay Company

WINNIPEG (Canadian Press) —Eighteen young Scotsmen and Englishmen have left their native lands to work in Canada's north. They say there is more chance for advancement there.

Eleven of the youths—all either 18 or 19 years of age, left Winnipeg recently to take up clerking duties in the northern stores department of the Hudson's Bay Company.

Some of the eleven will be stationed as far as 1,200 miles north of here at Baffin Island. Three will be posted to points in the Arctic, four to the Northwest Territories and the remainder in northern parts of several provinces.

The seven other youths who left their old country homes were scheduled to travel to the north from Montreal.

CANADA DIGS PAST IN WIDE RESEARCH

1959 Called a Good Year in Archeaological Discovery—Finds Are Summarized

OTTAWA (Canadian Press) —As archaeological works goes on in Canada, 1959 was a good year.

Seven parties organized by the National Museum delved for traces of prehistoric man from Quebec to Vancouver Island and as far north as the eastern Arctic and the western Yukon.

One sifted through the site of the south Saskatchewan dam, seeking traces of early prairie dwellers. Another pursued the tracks of early migrants streaming south from Asia by way of the Bering Strait zone.

Near Tadoussac, Que., at the mouth of the Saguenay River, searching disclosed early stone tools plus an Algonquin tribal site. On Mansel Island off northern Ungava, early Eskimo flint tools and weapons perhaps 2,500 years old were discovered on fourteen sites.

"From the standpoint of a coordinated program, it was probably our best year," according to Dr. Richard MacNeish, senior museum archaeologist, who spent his eleventh summer in the Yukon and Northwest Territories. Thousands of stone weapon heads, skin scrapers, choppers and cutting tools now are being sorted and studied.

"But Canada is a vast country and we have — literally — barely scratched the archaeological surface yet," he added in an interview.

There was the problem of coordinating programs among the various individuals and such institutions as universities, and of getting enough men and money.

Dr. MacNeish described the present program as just a preliminary attempt to solve some of the country's archaeological problems and get a firmer idea of North America's prehistoric man.

Dr. MacNeish, himself, spent three months between Champagne and Kluane Lakes in the southwestern Yukon, trying to sort out the chronological order of sites and relate a series of prehistoric cultures with their Asian background and new-world evolution. Three excavations—one with twelve zones or levels — produced about 2,000 artifacts, including some about 8,000 years old.

Arctic Islands

Canada's largest Arctic Island, Baffin, covers 197,000 square miles compared to 32,000 square miles for Russia's Novaya Zemlya.

CANADIAN ARCTIC SPURS TRANSPORT

Vast Extent of Area Puts Aviation and Roads First in Development Needs

By RAYMOND DANIELL
The New York Times.

YELLOWKNIFE, Canada, Aug. 26—Prime Minister John Diefenbaker's vision of a Greater Canada through northern development is causing some mixed reactions in that remote region.

The Government's expressed confidence in the future of the northern regions has aroused local pride and ambition to the point where the demand for development threatens to outrun capabilities.

Communities all over the North are demanding new air strips, better air service, improved communications, new highways and railways. Hand in hand with these demands there is disappointment in many sections that more has not been done.

George Hees, Minister of Transport, on a recent trip of inspection that carried him well beyond the Arctic Circle, found it necessary many times to explain that capital investment and physical development would have to keep pace with economic growth and need but not outstrip it. Great as is the progress that has been made in the Far North since World War II, it is still true that the economy of the region depends heavily upon the Government's spending and payrolls.

The Yukon and Northwest Territories total more than 1,500,000 square miles and are 41 per cent of the area of Canada. Transportation, not climate, is the limiting factor in developing the rich mineral deposits.

It is on the transportation problem that the Government is concentrating. By the end of this year's construction season more than 200 miles of development roads will be completed and about 425 miles of preliminary surveys will have been made for new roads planned from the Alaska Highway northwest to Ross River and Carmacks. A 250-mile extension of the MacKenzie River Highway is planned to extend 250 miles east of Yellowknife to Fort Reliance.

A new $5,000,000 air strip is being built at Inuvik, the new Aklavik in the Arctic, and another $20,000,000 is being spent improving the airport at Frobisher on Baffin Island as a supply center for the Eastern Arctic.

More than 86,000,000 acres in the Yukon and the mainland of the MacKenzie district have been taken up under permit for oil and gas exploration. In addition 95,000,000 acres on the northern Continental Shelf and the Arctic Islands are under application for oil exploration.

About 15 per cent of the permits are held by United States corporations, 13 per cent by Canadian subsidiaries of United States companies, 4 per cent by British interests and 68 per cent by Canadian interests.

In opening up this vast region of Canada's long dormant North, nearly every Canadian Government department will be called upon to play a part; but there is none more vital at this stage than the role of the Ministry of Transport. Its supply ships, its radio aids to air and sea navigation, its programing and construction of better air facilities and land communications are laying the groundwork for the eventual opening of the Arctic to commercially feasible development.

Arctic Phone Line Busy, Too

OTTAWA, Dec. 23. — A ceremony inaugurating telephone service to the Eastern Arctic outpost of Frobisher Bay was delayed today because the line was busy.

Officials invited Marie Panegoosho, an Eskimo girl living in Ottawa, to participate by speaking a few words to Frobisher in the Eskimo language. She asked to speak to a friend, Paulette Anerodluk, and once connected they talked fifteen minutes despiste efforts of a telephone company engineer to end the conversation.

UNDERSEA RESEARCH AIMS AT SUBMARINE

ESQUIMALT, B. C. (Canadian Press) — Since 1948 the Pacific Naval Laboratory here has concentrated on underwater research to meet the submarine threat in any future war.

Dr. F. H. Sanders, superintendent of the laboratory here, told reporters of the many projects undertaken in the search for a system that will hunt down a submarine wherever it may lurk.

Close liaison is maintained with British Admirality researchers and United States scientists.

Most important of the three major groups of studies here is the field of marine physics, the science of underwater acoustics.

Two research vessels are maintained, former naval vessels that carry their studies into mid-Pacific and Arctic waters.

This spring a research group was flown up to Resolute Bay in Barrow Strait, in the mid-Arctic.

Four scientists from the Pacific Naval Laboratory and an ice physicist from McGill University spent fourteen days on an ice floe. They bored holes seven feet through the ice to test the acoustic properties in the water below.

The long-range project of the scientists is to detect the presence of a submarine anywhere at sea.

Frobisher Bay Races to Extend Runways Before Winter Arrives

Airport in Northeast Canada Is on Great Circle Route —Harbor Improved

By RAYMOND DANIELL.
The New York Times.

FROBISHER BAY, Baffin Island, Aug. 19—Between the small Canadian weather station at Cambridge on Victoria Island within the Arctic Circle, and Churchill on Hudson Bay lie more than 1,000 miles of tundra, uninhabited except for nomadic Eskimos and a tiny weather station at Baker Lake in the District of Keewatin.

Flying over this eerie, barren land, a mosaic of brown and yellow lichened rock, dimpled with countless lakes, gives one the feeling of soaring through outer space, past another planet.

After leaving Churchill, an important grain-shipping point at the end of the railway in Manitoba, the flight goes over Hudson Bay and Hudson Strait to Baffin Island and the big airport at Frobisher Bay, midway on a Great Circle route between San Francisco and Los Angeles and Paris, London and Brussels.

Occasional Ships Seen

On this leg of the journey, great ice floes, some fifty to sixty miles long and almost as wide, can be seen. Here and there an occasional freighter, or an icebreaker, is hurrying to get to an Arctic port before another freeze begins in October. Whether over land or sea, one is struck by the vast stillness of the Arctic.

That impression is dispelled minutes after landing at Frobisher Bay. Here men and machines are racing against time to complete this summer's construction work before winter returns. Steel girders for new hangars are going up. Asphalt is being laid to lengthen the runways by 3,000 feet. Ships are being unloaded and their cargoes transferred to heavy trucks. New homes are being built for Eskimos.

All sorts of heavy machinery and a small army of men are tearing into the bedrock to provide more fill for a huge jetty that is being built to facilitate the unloading of ships.

The New York Times Aug. 31, 1959
Frobisher Bay (cross) is racing to complete construction before winter.

Frobisher Bay is the most accessible seaport in the eastern Arctic, which makes it an important supply point for the eastern Dew Line and remote weather stations.

The airport here cuts an hour from flights between western Europe and the west coast of North America. This is said to save 13,000 pounds of fuel on each flight. Of equal importance is the fact that the weather for landing here is exceptionally good. The airport is usually closed in only a few days a year.

The airfield at Frobisher Bay was built by the United States Army Air Force in 1942 as part of the Crimson Staging Route to Britain. Canada paid $6,800,000 in 1944 for the buildings and facilities.

The Department of Transport took over from the Royal Canadian Air Force in September, 1957, and proceeded with the development of the civilian airport. International airlines began using the airport as a refueling point in the last year.

YUKON TERRITORY HAS FIRST OIL FIND

Importance Seen in Fact That New Potential Area Has Been Opened

OTTAWA, Aug. 18 (Canadian Press)—Discovery of oil and gas in the Yukon, about 200 miles northeast of the 1898 gold-rush town of Dawson, has been announced by Canada's Minister of Resources, Alvin Hamilton.

He said today that the real significance of the development was that "a brand new potential oil-bearing area has been found."

The discovery well is in the 3,000,000-acre Eagle Plain oil reservation. It was drilled by Western Minerals and yielded gas flows of up to 10,000,000 cubic feet a day and light gravity oil, the announcement said.

Mr. Hamilton said this was not a big flow but was considered about average for Western Canada. Seven companies in the area still were drilling and seeking additional information, he continued.

Mr. Hamilton said that there now were more than fifty crews operating in the Northwest and Yukon territories. They consist of nearly 450 scientists and men.

"Never in the history of Canada has there been such a concentration of men and machines engaged in an investigation to advance the economic strength of our Northland," Mr. Hamilton said.

The strike was important, Mr. Hamilton said, because the area was about 600 miles north and 400 miles west of the nearest oil and gas finds in recent years in northwestern British Columbia.

The Minister said the discovery area was about 450 miles from tidewater at the Pacific Coast. This was significant, he said, because if oil were found in commercial quantities it could be sent to the coast by pipeline where it could be loaded aboard tankers twelve months of the year.

Under the supervision of the Federal Public Works Department a 200-mile road is being built from Flat Creek, fifteen miles east of Dawson, to the reservation's southern limits. About fifty miles is expected to be built this summer.

"This is the first discovery of oil in the Yukon Territory and the first in the Far North since the Norman Wells oil field was discovered in the Northwest Territories in 1920," Mr. Hamilton said.

Cores from the drilling at Eagle Plain were being taken by helicopter to Whitehorse to be sent to Edmonton or Calgary for further testing.

The New York Times Aug. 19, 1959

OIL FIND: Site of gas and oil discovery (cross) in Yukon Territory about 200 miles northeast of the gold rush town of Dawson.

Find Called Encouraging

VICTORIA, Aug. 18 (Canadian Press)—A. P. Davidson, chief of the Resources Division of the Northern Affairs Department, today described the discovery of oil and gas in the Yukon as "encouraging, perhaps a major development."

"It is very encouraging that evidence of oil and gas resources has been found so quickly in the Yukon field," Mr. Davidson said.

The well is only the second drilled in the northern Yukon, he said.

ESKIMO REVERSES TREND

Race Conquers White Man's Diseases and Is Gaining

Canada's Eskimos, long regarded as a disappearing race because of white man's diseases, are beginning to grow in number, according to United Press International.

Ten years ago, there were but 7,000 of them; today, there are 11,000; and the forecast by the end of the century—20,000. Progress against tuberculosis is the main reason for the turnabout.

Canada Issues Book on Arctic

OTTAWA, Oct. 14 (Canadian Press) — The first book of a three-volume series intended to give marine navigators a detailed picture of the Arctic was published today. The series, compiled under supervision of the Department of Mines and technical surveys, will contain descriptions of Arctic coasts, islands, sounds and channels; ice movement, shoals, weather conditions, vegetation, geography and peoples.

BIGGEST CONVOY OFF TO ARCTIC

Montreal, July 25—(UPI-CP)—An eight-ship convoy moved down the St. Lawrence today, headed for remote Arctic islands where they will unload supplies of food, machinery and building materials.

The ships, led by the big icebreaker D'Iberville, left here yesterday in the biggest northern supplies mission Canada has ever undertaken.

Transport Minister George Hees and a group of transport department officials witnesses the sailing. The smaller icebreaker Ernest Lapoint followed the D'Iberville. The Canadian-owned freighter, the Federal Voyager, stepped in line next along with the tanker Irvingwood.

The Lapoint will lead a pack of four vessels to Baffin Island, through the Hudson Strait and to mid-Canada line stations. The other ships will cover the extreme northern points.

Twenty chartered freighters and tankers, 13 government ships, including icebreakers, and more than 130 landing craft are taking part in the 1959 Arctic task force.

They are to carry more than 80,000 tons of general cargo, fuel and diesel oil and aviation gasoline to northern outposts, weather stations and radar centres.

ESKIMOS TO DRILL FOR OIL IN ARCTIC

CALGARY. Alberta (Canadian Press — A Calgary oil drilling company, with an eye cocked to oil development in the Arctic, has hired three Eskimos as trainee drillers.

The trio, signed on at Inuvik in the Mackenzie Delta, now are working in the Seven Hills Oilfield, 150 miles north of Edmonton.

Bob Sparrow, vice president and general manager of Peter Bawden Drilling, Ltd., says the company "can see the writing on the wall.

"We are convinced there is a great future for the oil business in the Northwest Territories, the Yukon and the Arctic islands."

One of the problems will be staffing oil rigs.

FLINTS IN ARCTIC KEY TO PREHISTORIC MAN

OTTAWA, Oct. 13 (AP)—Hundreds of flint fragments gathered in the eastern Arctic this summer may mean a major breakthrough in the story of prehistoric man in that area.

About 200 pounds of flints were collected by William E. Taylor of Canada's National Museum. They include whole or partial skin-scrapers, incising tools and spear tips indicating an ancestral link between the forerunners of the present Eskimo—or Thule culture—and the eastern Arctic dwellers of 20,000 B. C. to 10,000 B. C.

This clashes with a theory that the prehistoric or pre-Dorset culture was of Indian origin.

Mr. Taylor spent his ninth straight summer in the eastern Arctic. For seven weeks he worked on rainswept Mansell Island, at the mouth of Hudson Bay just off Ungava.

He found fourteen sites in all, including five of the ancient pre-Dorset culture. One site was 6,000 feet long. Another stretched 3,000 feet. Most of the flints were plucked from the surface.

Mr. Taylor believes the present Eskimo culture began moving out of northern Alaska about 900 A. D. and succeeded the Dorset in eastern Canada and Greenland by 400 years later. There is no evidence to show whether the transition was peaceful or otherwise.

U. S. and Canada Plan New Research Base

MONTREAL (AP).

Joint Canadian-American efforts next spring will start establishment of a permanent research base on desolate Devon Island—in the Canadian Arctic 2,300 miles north of Montreal.

The project is being tackled by the Arctic Institute of North America — grouping experts from both countries.

Announcing the project, Dr. Maxwell J. Dunbar, associate professor of zoology at McGill University, said about $110,000 will be spent in the next two years to bring the base into full operation.

A research team headed by Spencer Apollonio, graduate student working at Yale University's Bingham Oceanographic Institute, will head for Devon Island—at the northern tip of Baffin Bay—next spring.

Arctic Sanctuaries

Two new Canadian bird sanctuaries embrace more than 1,000 square miles on Southampton Island in northern Hudson Bay.

PLATEAU MAPPED IN ARCTIC OCEAN

Area Is More Than Double Connecticut's, Columbia Scientists Announce

Nov. 17

American scientists reported yesterday on their study of a newly discovered submarine plateau in the midst of the Arctic Ocean. Its area, they said, is more than twice that of Connecticut.

It rises abruptly 8,100 feet from the ocean floor and comes within 900 feet of the floes drifting across the ocean surface. It was detected last summer from Station Charlie, a United States scientific outpost on one of the larger floes.

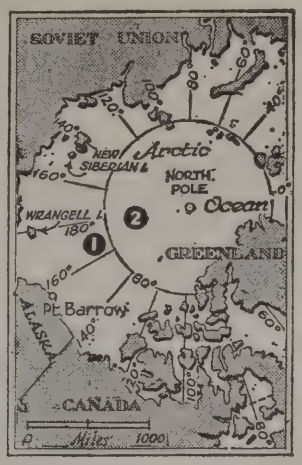
The plateau, or part of it, had apparently been observed earlier by one of the drifting stations maintained on floes by the Soviet Union. It likewise seems to have been detected by the United States atomic submarine Nautilus on its historic voyage through the Arctic Ocean in the summer of 1958.

The haphazard movements of the drifting stations, with the whims of wind and current, carry them back and forth over the ocean floor. This makes it possible, by echo sounding, to map features on the bottom.

Yesterday's report was issued by Columbia University, which helped staff Station Charlie. It said that trawls of the plateau brought up a comparative abundance of life, whereas the surrounding ocean floor was extremely barren. One of the creatures taken was a two-inch animal, shaped like a tear-drop with a large blue eye on either side.

William J. Cromie, one of the four men from Columbia stationed at Charlie, is back at his post at the university's Lamont Geological Observatory. He pointed out yesterday that the plateau was outlined on a Soviet chart of the Arctic Ocean floor.

In the summer of 1958 another American drifting station discovered a submerged mountain range parallel to the loftier Lomonosov Ridge, which bisects the Arctic Ocean. The Russian chart, Mr. Cromie said, also carried a "vague hint" that Soviet scientists had observed part of this range.



The New York Times Nov. 17, 1959

ARCTIC: Plateau (1) and a mountain chain (2) spotted.

HIBERNATION BEGINS

Year's Last Ship to Greenland Sails for Copenhagen

GODTHAAB, Greenland, Nov. 29 (Reuters) — Greenland was "locked up" for the icebound winter today when the last ship this year sailed for Copenhagen after the vessel had brought in supplies, including Christmas trees.

No passenger ships are expected to sail between Greenland and Denmark until February or March, following last year's disaster when the cargo liner Hans Hedtoft went down on her maiden voyage, with the loss of ninety-five lives, after she had hit an iceberg en route to Copenhagen.

Greenland's towns have supplies sufficient for three to four months. Essential medical and small items will be brought in by plane.

ARCTIC OCEAN LOW IN FOOD RESOURCES

WASHINGTON (Science Service)—The Arctic Ocean has been found to be one of the most barren of the world's oceans.

Although it comprises one twenty-third of the area of all oceans, it contributes only about one one-thousandth of the total oceanic production of small plant and animal life, a basic food for larger marine life.

This conclusion is based on studies made prior to and during the International Geophysical Year and reported here by the United States National Committee for IGY of the National Academy of Sciences.

The studies involved measurements of the amount of photosynthesis taking place in the Arctic Ocean and of the concentrations of chlorophyll and nutrients in the water.

Ice-free Arctic waters may develop a maximum chlorophyll concentration as much as thirteen times that found in the ice-covered Arctic Ocean, it was found.

But even if the small amount of sunlight penetrating the Arctic ice did not limit the growth of tiny plant life, the committee said, the poverty of the Arctic Ocean in nitrate and phosphate nutrients would still make its productivity level one of the lowest in the world.

Antarctic Expert in Greenland

The New York Times.

FORT MONMOUTH, N. J., Aug. 29—A veteran of seven expeditions to the Antarctic is in northern Greenland to establish a meteorological station there, military authorities here announced today. He is Amory H. (Bud) Waite of the Army Signal Research and Development Laboratory.

Mr. Waite, who first visited the polar regions with the late Admiral Richard E. Byrd, is the communications representative on the ten-man Greenland mission. It is headed by Dr. Helmut K. Weickmann of the Meteorological Division of the Signal Laboratory here.

When completed, the Greenland station will have three 100-foot weather towers in the northern part of the island. Housing and buildings already have been built by the Army Corps of Engineers.

Amory H. Waite

Fat Around Midsection Won't Keep You Warm

By the Associated Press

If you've developed a bit of padding, the natural kind, around the middle, don't alibi that you need the fat to stay warm.

Fat isn't worth much as insulation, according to scientists whose studies have been abstracted for the Defense Department to use in polar operations. How do the scientists know? From investigating Eskimos, reindeer, seals and "various Arctic animals."

This and many another fact and theory can be learned in "The Polar Bibliography," a thick volume with penguins and a bear on the cover. It contains digests of about a thousand learned papers, of various degrees of fascination.

Back to the one about fat and temperature:

"From observation of the native Eskimos it would appear that the thickness of subcutaneous fat varies with the excess of nutrition over activity without important relation to needs for insulation."

In short, if you're fat it's because you eat too much and lie around too long.

After observing that, understandably, "dogs are said to show dislike for exposure to temperatures below minus 40 degrees Centigrade," the paper notes that no healthy dog accustomed to the Arctic has ever been known to freeze to death. Fur or feathers, the paper concludes, have it all over fat or blubber when it comes to insulation.

How about imroving on fur? Another paper described some attempts. Some of the synthetic furs, used as ruffs around the face, were better than the natural article at shedding ice. But for "wind protection and comfort" the old wolfskin showed up best.

Ice Patrol Off Greenland Set

COPENHAGEN, Denmark, Sept. 1 (Reuters)—An ice patrol will be started this winter off Greenland, where the Danish ship Hans Hedtoft sank last January with the loss of ninety-five lives after hitting an iceberg. Two amphibious Catalina planes will patrol in turns, to report heavy ice drifting toward North Atlantic sea routes.

RUSSIANS ABANDON FLOE

Arctic Explorers Leave Note and Cache for Travelers

MOSCOW, Sept. 14 (AP)—A Soviet scientific expedition that had drifted for three-and-one-half years on an ice floe near the North Pole was abandoned today, Tass reported.

Men and equipment were taken off by plane and put aboard ship, according to the Soviet press agency. They left a note in Russian and English saying:

"Dear travelers:

"Soviet polar explorers, the personnel of the North Pole Six Station, have lived and worked here in the name of science for three-and-one-half years.

"On leaving the ice floe, we leave behind this hut with a supply of food and other things which are sometimes so badly needed by travelers. We shall be glad if our hut provides shelter for you, if these supplies brace you up, and the fire in this hearth warms your blood.

"We wish you, unknown travelers, luck and happiness."

MOSCOW, Sept. 8 (AP)—Tass, the Soviet press agency, said the veteran Arctic flier, Ivan Cherevichny, had safely landed on the floe for the second time to carry out the evacuation and that the operation was expected to be completed in ten or twelve days.

Known as "North Pole 6," the 5 by 8 mile floe was first occupied in April, 1956, when it was about 200 miles from Wrangel Island off northeast Siberia. It is now 180 miles northeast of Greenland, Tass said, after drifting more than 8,400 miles.

The agency said the floe was being abandoned because its southern drift made it useless for further observations.

The scientists carried out studies of oceanography, ice conditions, geology and weather observations, Tass said.

Soviet Studies Arctic Floes

LONDON, Oct. 10 (Reuters)—A Soviet expedition has set up automatic radio equipment on drifting ice floes in the Arctic Ocean, Tass, the Soviet press agency reported today. Radio data on the direction and speed of drifting ice is being nalyzed at polar observatories, V. Moroz, leader of the expedition, said. The expedition returned to Leningrad today.

Soviet Arctic Ports Closed

MOSCOW, Oct. 20 (AP)—Navigation has ended for the winter in the Soviet regions of the Arctic Ocean, the Soviet press agency Tass reported today. The newspaper Morskoi Transport said the 1959 season had been "very successful."

Soviet Atomic Icebreaker Lenin on Maiden Voyage

Soviet nuclear-powered icebreaker Lenin moving down Neva River in Leningrad

LONDON, Sept. 15 (Reuters)—The Soviet atomic icebreaker Lenin weighed anchor today at Leningrad and sailed on her maiden voyage into the Baltic Sea.

The Soviet press agency Tass reported the departure as Premier Khrushchev flew to the United States.

The 16,000-ton vessel, the world's first atomic surface ship, is said to be able to carry enough fuel to cruise for several years.

Powered by three nuclear reactors producing 44,000 horsepower, the Lenin has been undergoing trials since she was launched in December, 1957.

Her main task will be to keep open the Arctic sea route along the north Siberian coastline, providing an 11,000-mile link between the seaports of Murmansk and Vladivostok. The route at present is open only about ten weeks each year. The Lenin is designed to cut a 100-foot-wide passage through ice of any thickness.

Should the icebreaker be stopped by the ice, pumps can drive up to 4,000 tons of water an hour into her bow tanks, enough to break through any ice barrier, Soviet shipyard officials said.

Dog Battles Polar Bear To Save a U. S. Colonel

ANCHORAGE, Alaska, Sept. 29 (AP)—A female sled dog named Red fought a bloody battle with a polar bear to save Col. E. D. Feathers, the Alasak Air Command reported today.

The colonel, commander of the floating weather station in the icy Beaufort Sea, met the 275-pound bear in the afternoon semi-darkness. The bear lunged.

"I tried to make it to my quarters, some seventy-five feet away," the colonel reported. "I couldn't get much traction in the ice and snow. Just when it seemed the bear was on top of me, Red attacked him from the rear."

While the bear was trying to catch and kill Red a member of the station staff slew the beast with his revolver.

Red was mauled severely but will live, the report said.

Copter Aids Stricken Scientist

WASHINGTON, Aug. 15 (UPI)—The Coast Guard reported today that a Danish scientist had been evacuated by helicopter from a remote project in Greenland after having been stricken with appendicitis. The scientist was identified as Anker Weideck.

Greenland Icy

The 840,000-square-mile island of Greenland is more than four-fifths covered by an ice cap.

Scientist Says Reds Lead in Arctic Study

SAN DIEGO, Calif., Aug. 29 (AP).—Russia leads in knowledge about the Arctic Ocean even though United States atomic - powered submarines have been the first to cross it under its ice pack, according to a Navy scientist.

Dr. J. W. Horton, technical director of the Navy Underwater Sound Laboratory at New London, Conn., said the Russians also are ahead in oceanographic research generally.

"They have 170 oceanographic vessels while we have very few," he said.

His comment came at an anti-submarine warfare conference sponsored jointly by the Navy and Institute of Aeronautical Sciences.

Others attending, including Admiral Herbert G. Hopwood, commander in chief of the United States Pacific Fleet, stressed the need for greatly increased study of underseas conditions.

"The Russians," said Dr. Horton, "know a great deal about that vast and mysterious sea beneath the Polar ice. We know very little. It is one of the most important water areas of the world for submarine operations."

STEFANSSON GETS BIRTHDAY SALUTE

Colleagues Paying Respects to Arctic Explorer

By WALTER SULLIVAN

Vilhjalmur Stefansson, explorer, historian and champion of the Arctic, became 80 on Nov. 3

At Dartmouth College, in Hanover, N. H., where he is now working, his colleagues are to pay their respects. Messages of salutation have begun to arrive from explorers, geographical societies and polar enthusiasts in many parts of the world.

Senator Richard L. Neuberger of Oregon hailed Mr. Stefansson's "outstanding service" to humanity as "an inspiration to all Americans."

Senator Ralph E. Flanders of Vermont, noting that he was one year younger, sent his tribute "to an older man on his eightieth birthday." He added: "I salute you as a realist in a realm of romance and fancy."

Rockwell Kent, the artist, addressed his greeting, "To what Diogenes went looking for and Pope proclaimed as the noblest work of God."

Mr. Stefansson was born in Manitoba of Icelandic parents. After graduating from the University of Iowa and working three years at Harvard University in theology and anthropology, he made his first exploratory effort. This was an archaeological trip to Iceland in 1904. During the next twenty-four years he spent ten winters and thirteen summers in the Arctic.

In this period he lead what has been described as the most prolonged polar expedition in history. He was north of the Arctic Circle for an unbroken period of more than five years.

In late September, 1913, he and one of his men, the late Sir Hubert Wilkins, then a youth of 25, camped on the floes during a sledge journey from their ship, the Karluk.

They discussed the potentialities of the airplane as a tool of polar exploration, but Mr. Stefansson proposed the submarine as more reliable and valuable.

It could surface in open lagoons throughout the polar pack, and, because of its slow pace, could carry out extensive scientific work, he said.

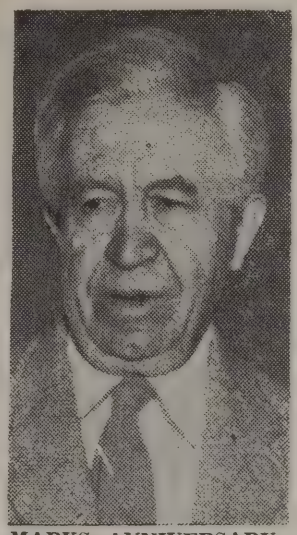
The outcome was an attempt by Sir Hubert, eighteen years later, to journey by submarine from the Atlantic to the Pacific via the North Pole. It was cut short, largely because of the condition of the out dated submarine, which had been rechristened the Nautilus.

However, in the summer of 1958 another submarine of the same name, the world's first nuclear-powered vessel, made the historic journey in the opposite direction.

Mr. Stefansson is known to explorers throughout the world as the man who demonstrated that a diet made up entirely of fish and meat, such as that eaten by the Eskimos before their encounter with white men, was all that an explorer needed.

In his later years he has become more historian than explorer. His tape recorder is constantly at his side and his polar library, now at Dartmouth, is one of the most complete in existence.

The titles of some of his books are clues to the roles for which he has won fame: "The Friendly Arctic," "The Northward Course of Empire," "Northwest to Fortune," and "Not by Bread Alone."



MARKS ANNIVERSARY: Vilhjalmur Stefansson, who reaches age of 80

2 Explorers Swap Tales Of Arctic

WASHINGTON, Nov. 21

Two arctic explorers, one who went over the frozen wastes by dog-sled and the other who saw them from an atomic submarine, exchanged stories yesterday.

Dr. Vilhjalmur Steffansson, of the old school, introduced an arctic explorer of the atomic age, Comdr. James F. Calvert, skipper of the Skate, the atomic submarine which broke through North Pole ice on March 17, to National Geographic Society members. Comdr. Calvert told the society about his polar journey in a lecture entitled "Up Periscope at the Pole."

Dr. Steffansson, 80, said that 40 years ago he discussed with Admiral Robert E. Peary the advantages of exploring the arctic by submarine. At the time, Peary said he would rather explore by airplane.

"It's often been thought that Peary and I disagreed about the future of arctic exploration," Dr. Steffansson said. "That isn't true. To me, the submarine would supplement the airplane. The airplane would provide speedy transport of passengers and air express. The submarine would do the heavy freighting. They were to be considered together. Both Peary and I were in favor of both."

He said watching whales break through the polar ice convinced him a submarine could do the same thing. This is just what the Skate did early this year at the North Pole.

Eskimos Depend on Caribou

Caribou are the chief source of livelihood for Alaska nomadic Eskimos, says the National Geographic Magazine. The animals furnish meat for food, horn for implements, and hides for tents, rope, and clothing.

Army Polar Specialist Keeping Cool on Job

Dr. Carl R. Eklund has found an unusual way to avoid Washington heat. He travels to the polar regions and other icy points.

The 50-year-old Army polar analyst is now in Greenland with the Polar Research Division of the Army Research Office.

Previously, he served during the 18-month International Geophysical Year as a scientific leader at the United States Wilkes Station in the Antarctic.

Dr. Eklund began his treks to the far north and south in 1939, when he visited Antarctica the first time with Admiral Byrd.

A native of Northern Wisconsin, he applied for the job because he was "a Swede and a hearty and rugged soul."

He was hired as a biologist and dog driver for $10 a month and was later promoted to ornithologist with the Byrd expedition.

Recognized as an authority on bird life in the polar regions, Dr. Eklund did research on the emperor and Adelie penguins and skua eggs while with the IGY team.

By developing a technique of inserting a telemeter into the penguin eggs, he discovered how the eggs incubate in the Antarctic winter at temperatures as low as 77 below zero.

The incubating penguin egg was only 11.1 degrees below body temperature despite the intense cold, he discovered.

He recorded his findings in a thesis, "Life History Studies of the South Polar Skua," and earned his doctorate from the University of Maryland

According to his wife Harriet, Dr. Eklund's Ph.D. climaxed 11 years of night school between trips. Most of his thesis was written on the way back from the IGY expedition, she reports.

Before taking polar jobs, Dr. Eklund worked with the United States Fish and Wildlife Service and as a conservationist with the National Park Service. During World War II he was assigned to the Arctic-Desert-Tropic Branch of the then Army Air Corps, serving much of the time in Greenland and Labrador.

LIBRARY EXCHANGE SET

Dartmouth Polar Collection in Program With Soviet

HANOVER, N. H., Oct. 3—Dartmouth College announced this week that regular exchanges of literature between the world's largest polar libraries had been arranged. One is the Stefansson Collection at Dartmouth and the other is the Arctic Institute, Leningrad, Soviet Union.

Mrs. Evelyn Stefansson, librarian of the collection, made the arrangements for the exchange on her recent visit to Russia. Books and periodicals will be exchanged with the Arctic Institute and with the Lenin Library, Moscow.

The Stefansson Collection was acquired by Dartmouth from Mrs. Stefansson's husband, Vilhjalmur Stefansson, explorer and arctic consultant at the college.

The collection here is expected to provide a valuable research adjunct to the proposed Cold Regions Engineering Laboratory, which the Federal Government plans to establish in Hanover.

U. S. to Chart Unknown Areas of Antarctic

Scientists Will Study New Fields on Trip

By JOHN W. FINNEY
The New York Times.

WASHINGTON, Aug. 16—The United States in the coming year will explore unknown areas of Antarctica, attempt to determine if the frozen continent is divided, and study the birds and fishes of the polar region.

These plans for the exploration in 1959-60 were announced today by the National Science Foundation, which has been given responsibility for directing the United States Antarctic research program.

The program for scientific exploration, beginning in October, calls for greater emphasis to be placed than in the past on geology, cartography and biology of the Antarctic region.

In explaining the shift in scientific emphasis, Dr. Alan T. Waterman, director of the foundation, pointed out that during the International Geophysical Year, the investigations had been primarily in the field of geophysics.

"Many very basic questions about Antarctica remains unanswered, as for example the locations of mountain ranges and the types of marine life around the continent," he said. "Work during the forthcoming year will attempt to fill in many of these gaps in our knowledge."

The foundation announced the award of $3,170,069 in grants to support the program of scientific research and exploration. The funds will go for twenty-nine projects, ranging from extensive oversnow traverses of the continent to a study of the nasal discharges of the penguin.

Logistic support for the scientific program will be provided once again by the Navy, which is preparing to send another fleet of supply ships and icebreakers to Antarctica as part of "Deepfreeze 60." The Naval support force will be under the command of Rear Admiral David M. Tyree.

Two Navy icebreakers will attempt to penetrate the previously unexplored waters of the Bellingshausen Sea. Aboard the ships will be a team of scientists to gather information in biology, geology, cartography, oceanography and glaciology.

The United States research program will be carried out at seven installations in Antarctica, some of which are operated jointly with the Governments of New Zealand, Argentina and Australia. Thirty-five United States scientists will remain through the 1960 antarctic winter. Twice that number will be doing research in the coming summer.

The research program will get under way in October—the start of the antarctic summer. Two oversnow traverses by snow tractors are planned for the summer.

One traverse party, consisting of seven or eight scientists, will climb the Skelton Glacier from McMurdo Sound for a three-month survey of Victoria Land. This is a desolate, ice-capped expanse, 7,000 to 8,000 feet high. Seismic soundings and gravity, magnetic and glaciological studies will be made along the route in addition to geological investigation in the Skelton and Hallett areas.

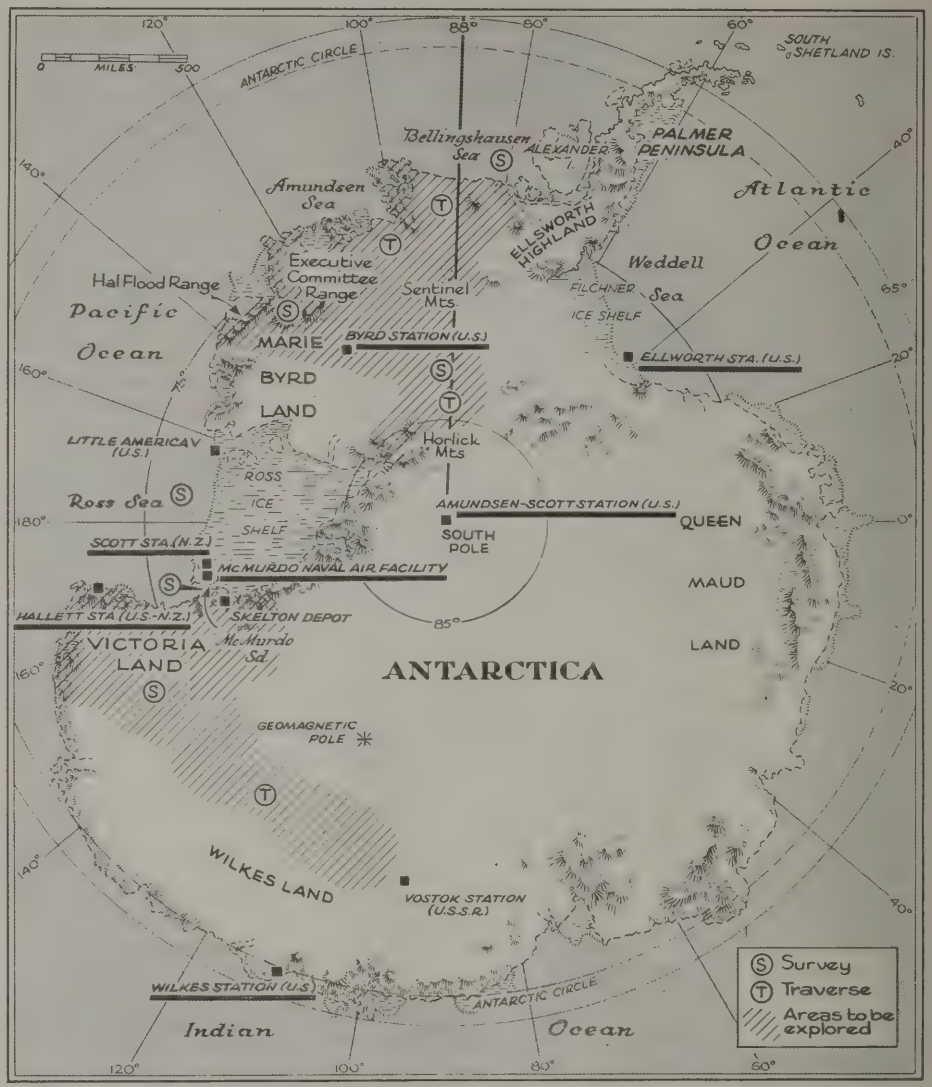
A second party will leave Byrd Station in October for a 1,200-mile traverse of Marie Byrd Land to the coast near the Amundsen Sea. Geological and geodetic studies will be conducted in the Executive Committee and Hal Flood Ranges.

In addition, there will be an airborne traverse. On this, scientists of the University of Wisconsin will land by plane at eight to twelve points along the 88th West Meridian between Horlick and Sentinel Mountain.

They will carry out seismic, graviety and magnetic investigations, these may establish whether the continent is divided by a trough running between the Weddell Sea and the Ross Sea.

The foundation also announced that preparations are under way for two traverses in the 1960-61 season. One of these would go from the Byrd Station to the coast of the Bellinghausen Sea and the other penetrate the high polar plateau in the area between McMurdo, the Soviet station Vostok and the South Pole station.

As part of the biological research program, studies will be made on the ecology of the Ross Sea area, the fish in McMurdo Sound, the sexual behavior and orientation of the Adelie penguin. Also to be studied is the theory that salt taken in by the penguin is eliminated



The New York Times Aug. 17, 1959

New United States explorations in Antarctica will be undertaken from underlined bases

through nasal discharges.

The programs of United States scientists during the 1960 winter season, starting in March, will be as follows:

BYRD STATION—Eleven scientists will winter at Byrd Station pursuing studies in atmospheric noise, aurora, geomagnetism, glaciology, ionospheric physics, meteorology and siesmology.

AMUNDSEN - SCOTT STATION—Nine scientists will carry out investigations in aurora, geomagnetism, glaciology, ionospheric physics and seismology as well as special studies in solar radiation, ozone measurements, carbon dioxide and nuclear radiation.

NAVAL AIR FACILITY, McMurdo—Four scientists will investigate cosmic rays, conduct glaciological measurements, perform seismic soundings and operate the biological laboratory there.

HALLETT STATION—In cooperation with three New Zealand scientists who will carry out auroral, geomagnetic, ionospheric and seismic observations, two United States civilian meteorologists and three naval aerographers will make daily upper-air and surface weather observations and conduct research in solar radiation.

ELLSWORTH STATION—With Argentine scientists, who will operate the station, four United States scientists will do research on the aurora, cosmic radiation, geomagnetism, ionospheric physics and meteorology.

WILKES STATION—Australian and United States scientists will carry out projects in auroral investigation, biology, geomagnetism, ionospheric physics, meteorology and seismology at this Australian-operated station.

SCOTT STATION—At this New Zealand post, two United States oceanographers will investigate the waters and the ocean bottom of McMurdo Sound. A United States physicist will work with a New Zealand scientist on problems of auroral physics.

The New York Times.

WASHINGTON, Aug. 22—The Navy Department will soon begin dispatching men and machines to Antarctica to support new research activities as summer comes to the icy continent.

The Army, Air Force, Coast Guard and Marines will join the Navy in supporting the scientific effort. Rear Admiral David M. Tyree will be in command, as he has been since last April.

At the South Pole station, one of the four maintained permanently by this nation, Air Force Globemasters will drop a 16,000-pound tractor. It will prepare a runway for ski-equipped C-130 jet-propellor Hercules planes, used for the first time in the antarctic.

Globemasters will also drop supplies at Byrd Station. And a tractor train will take heavy equipment there from Little America.

At Hallett Station and McMurdo Sound, the two other permanent stations, icebreakers will prepare the way for cargo ships. A major building program is scheduled for McMurdo, with new structures to include buildings and three 250,000-gallon fuel tanks.

Capt. William H. Munson of Worcester, N. Y., will command Navy Air Development Squadron 6, including helicopters and an assortment of cargo planes to airlift personnel and light materials.

A squadron of Globemasters and Rescuemasters for heavier cargo will be commanded by Lieut. Col. Dewey R. Bridges of the Air Force. They will begin by carrying men and cargo from New Zealand to McMurdo Sound and then will fly into the antarctic interior.

The ship group will consist of four icebreakers, two cargo ships, one tanker and a destroyer escort picket. In command will be Capt. Edwin A. McDonald, U. S. N.

U. S., Reds Race for Firsts In Polar Science Studies

WASHINGTON, Aug. 29 (UPI) —Rivalry between the United States and the Soviet Union for scientific achievements in Antarctica is mounting with the approach of the 1959-'60 season.

Technical papers in unprecedented numbers have appeared in Washington and Moscow during recent weeks. Many of them indicate long-continued programs of the respective nations and probable permanent occupancy of some stations.

In recent months, the Commerce Department's Office of Technical Services has routinely translated into English many of the important technical reports of the Soviet expedition in Antarctica. Consequently, the race for scientific knowledge in Antarctica is generally better understood.

The United States may score an Antarctic "first" with the projected installation of a nuclear reactor at McMurdo Sound sometime within the next two years. This would solve heating and water-supply problems which have handicapped Antarctic scientific programs thus far. It would facilitate permanent habitation of stations.

Some of the significant Antarctic technical publications issued here recently were the following:

The National Academy of Sciences issued a report on aurora observations at the South Pole, prepared at Cornell University. This located the Antarctic auroral zone, the shift of positions on the zone, and the effects of twilight on auroral reporting. For the first time the Antarctic auroral distribution was charted geographically.

The National Academy also issued a summary of the work of New Zealand scientists in interpreting seismic records obtained during the I.G.Y. at Scott Base and Hallet Station. The report indicated the existence of a continent-type crustal structure beneath the ice mantle of a large portion of east Antarctica.

The National Science Foundation analyzed geological findings made by a United States traverse party in the Executive Committee mountain range, northwest of Byrd Station. Observations indicated that the mountains are volcanic in origin and are about 90 per cent covered by snow and ice. Additional investigations are planned in that area.

The National Academy of Sciences reported that a more accurate determination of the geographic position of the United States South Pole Station has recently been made by astronomical methods, using theodolite observations of the star Canopus. Computations were made by the United States Coast and Geodetic Survey.

The astronomical loft at the South Pole Station was found to be approximately 1,650 feet from the Amundsen-Scott geographic South Pole.

United States scientists at Byrd Station reported on a little known phenomenon known as "firn quakes." A firn quake is an ice-cap movement somewhat resembling an earthquake, but by comparison greatly limited in depth. area and severity. It is believed that the firn quakes are caused by collapse of frost layers a few years old under the weight of the overlying snow.

Johns Hopkins University and the National Institutes of Health are now examining hundreds of blood samples, virus cultures and bacterial cultures taken from United States personnel in Antarctica. Their object is to learn more about respiratory complaints, especially common colds. Rainier Goldsmith of the Medical Research Council, London, assisted in the field work. Australian and United States scientists will conduct similar projects during the next Antarctic season.

Among Russian publications issued here this week was a detailed report of glaciological observations in Antarctica, with a novel analysis of the "ice domes" which rise above the open seas in the form of islands.

The Russians found that the Shackleton ice shelf and West ice shelf have not changed substantially since observations made by the Norwegian expedition in 1937 and the United States expedition in 1947. However, the eastern part of the Shackleton ice shelf has increased considerably in area.

Algae in Arctic, Antarctic

Algae, a primitive water-growing plant, is found above the Arctic Circle and also in Antarctica.

Private Life of Penguin Is Target of Scientists

By the Associated Press

Scientists are doing their best to defrost the wall of secrecy that has surrounded the private life of the penguin, especially the Adelie penguin.

For years, the short-legged aquatic birds with flipper-like wings have waddled around in the coolness of the Antarctic pretty much undisturbed. Now they are the object of penetrating studies.

The sexual behavior of the Adelie is being studied at Wilkes Station in the South Polar area by Richard L. Penney of the University of Wisconsin. He's also looking into the Adelie's parental behavior and its orientation.

The salt and water metabolism of the penguin will be studied in the extensive penguin colony on Cape Hallett. The nasal discharge of the Adelie will be examined to find whether salt taken in by the bird is eliminated from the body by this means, as currently believed.

Donald S. Douglas, researcher for a Duke University project, will gather the metabolism information.

SCIENTISTS BRIEF ANTARCTIC TEAMS

Seventy Explorers From U.S. Prepare for Lonely Trip at Camp in Virginia

By WALTER SULLIVAN
The New York Times.

SKYLAND, Va., Sept. 21—Some seventy explorers who will represent the United States in the next phase of the assault on Antarctica assembled here today for four days of final briefings.

This resort atop the Blue Ridge Mountains has become the equivalent of a locker room in which the American team is being given a series of pep talks by leading American scientists.

Six of those being briefed hardly need it, for this will be their second year on the continent at the bottom of the world.

Today the groups of men who will be confined for months in six of the most isolated camps in the world met for the first time in the series of comfortable cottages.

Each group was assigned a cottage so that members could become acquainted.

They came from universities and colleges and from a number of United States Government agencies: the Geological Survey, the Coast and Geodetic Survey, the Weather Bureau, the Bureau of Standards, Bureau of Mines and the Navy Hdrographic Office.

The group was given a send-off this morning at the National Science Foundation in Washington, D. C., by its director Alan T. Waterman.

On arrival here they were briefed by Dr. T. O. Jones, Antarctic program director of the foundation, and by Dr. Albert P. Crary, chief scientist of the program.

Paul C. Daniels, special adviser to the Department of State on Antarctica, who holds the rank of ambassador, urged each man to promote the atmosphere of international cooperation, which is the United States' goal in Antarctica.

Some of the men will be going to stations administered by Argentina, Australia and possibly the Soviet Union.

Among those who will brief the group are Dr. Harry Wexler, director of meteorological research at the Weather Bureau, Dr. Maurice W. Ewing, head of Columbia University's Lamont Geological Observatory, William O. Field, head of the Explorations Section of the American Geographical Society and Dr. George P. Woollard, authority on gravity from the University of Wisconsin.

110 Below Sets South Pole Mark

AUCKLAND, New Zealand, Sept. 15 (AP) —The Temperature sank to record 110 degrees below zero at the United States South Pole station on Sunday, a message received at American headquarters in Christchurch said today.

POLES ONCE WARM, COAL BEDS INDICATE

WASHINGTON (NANA) — There are large coal deposits within 300 miles of both the North and South Poles.

This is evidence that in the so-called Permian geological era, the "age of reptiles" about 300,000,000 years ago, there were prolific forests in these areas. The polar regions must have been much warmer.

Several hypotheses have been advanced to explain this, Dr. Paul A. Siple, United States Antarctic explorer, told a conference of army scientists here. He himself has carried out extensive research at his Arlington, Va., home with a miniature model planet mounted on an axis and revolved rapidly, after the fashion of the world. On the surface of this model he represented the continents with patches of silicon putty, a material with many of the properties of the rocks making up the earth's surface.

His object was to see whether the "poles" actually changed position. It is known that they move a little, but the great climatic differences indicated by the coal fields suggest that the shifts at one time must have been very great.

Flag Flies Again at the Pole

AUCKLAND, New Zealand, Sept. 27 (AP)—The Stars and Stripes were raised at the South Pole again last Thursday for the first time since March 21. A dispatch from Expedition Deepfreeze headquarters today said that sixteen men of the United States wintering party had stood in temperatures of 65 to 70 degrees below zero to watch the flag raising at official sunrise, which ended six months of darkness on the bottom of the world.

Just the Place

United Press International.

CHRISTCHURCH, New Zealand, Nov. 2.—Ice cream is the most popular food of 17 Antarctic explorers wintering at the United States South Pole station, according to a radio report from Nello Bambini, a member of the expedition from Boston.

WOMEN MAY JOIN ANTARCTIC STUDY

First Contingent May Land for the 1960-61 Summer—Most Would Do Research

By WALTER SULLIVAN
The New York Times.

WASHINGTON, Sept. 22—The barriers of masculine resistance are crumbling and it appears that American women will soon be allow to visit Antarctica.

The decision is not final, but on the basis of information from both naval and scientific sources it appears that the first contingent may land about thirteen months from now at the start of the 1960-61 Antarctic summer.

All of the women would probably work at McMurdo Sound, returning home before the winter starts. Several women correspondents might also be permitted to go south.

Most of the women would do scientific research, but at least one would be a Navy nurse. According to naval sources it is felt that if any women are sent down there should be at least four.

During preparations for the coming summer, which will coincide with this winter in the north, several tempting research projects have had to be rejected simply because those proposing to do them were women. This seems to have been the straw that finally broke the back of naval resistance.

The seven bases built by the United States in Antarctica were set up for the International Geophysical Year of 1957-58. It was not thought worth while to undertake the added work necessary to accommodate women for a project of such limited duration.

Now, however, the United States is embarked on a long-range program of Antarctic research. The facilities at McMurdo Sound are being developed sufficiently to handle women without great strain.

This will not be the first visit of the fair sex to Antarctica. The first woman known to have landed there was Caroline Mikkelsen, wife of the Norwegian whaling captain, who landed with her husband on Feb. 20, 1935.

Subsequently, the wives of two American explorers, Finn Ronne and Harry Darlington, wintered at Marguerite Bay. The Russians normally carry women scientists on their Antarctic ships, though none are known to have stayed for the winter.

WASHINGTON, Sept. 23—A campaign is being started this week to bring to United States polar research a maximum of university talent.

The latest development is the formation of the University Committee on Polar Research, convened this week by the National Academy of Sciences at Skyland, Va.

It includes men from the Universities of Alaska, California, Michigan, Minnesota, Washington, and Wisconsin, as well as Columbia University, Ohio State and Dartmouth College. All these institutions are contributing to the polar research effort.

Their task is to seek ways in which the universities can help make the polar research effort as productive as possible.

The committee, whose chairman is Prof. James H. Zumberge of the University of Michigan, apparently does not wish to become embroiled in the controversy over central administration of the multi-million-dollar program. Nevertheless its formation is, in effect, an emphasis on the scientific approach.

3 I.G.Y. SCIENTISTS HONORED BY NAVY

WASHINGTON, Oct. 12 (AP) —The Navy honored three civilian scientists today for their direction of International Geophysical Year campaigns.

The Navy Distinguished Public Service Awards were given to Dr. Lawrence Gould, president of Carleton College, Northfield, Minn.; Dr. Herbert Wexler of the United States Weather Bureau, and Dr. Hugh Odishaw, National Academy of Scientists.

Vice Admiral Bernard L. Austin made the Navy presentations at a Pentagon ceremony.

Dr. Gould was chairman of the United States Committee for the IGY and was cited for achieving the closest co-operation between the Navy and civilian scientists during the Anarctic expeditions.

Dr. Wexler served as executive agent for the Anarctic program and was praised for his "outstanding leadership" in directing weather services in Anarctica.

Dr. Odishaw was scientific director of the Anarctic campaigns and was cited for bringing about the closest co-operation between the Navy and civilian scientists during several seasons on the South Polar continent.

Antarctic Plants

Plants such as blue-green algae and lichens grow in partly ice-free lakes in Antarctic valleys.

SEALS SAID TO DIE OF A WANDERLUST

Study Helps to Explain Why Polar Animals Are Found in Inhospitable Terrain

By WALTER SULLIVAN
The New York Times.

WASHINGTON, Sept. 24—Few mysteries of the polar regions have so tantalized scientists as the tendency of various animals to creep or fly great distances into utterly inhospitable territory.

A study of ninety seal carcasses, found as far as thirty miles inland and as high as 3,000 feet above sea level in an Antarctic "desert," has thrown new light on the problem.

The work has included an autopsy on one animal that may have been dead for thousands of years.

The evidence suggests that a certain number of polar animals may be killed by wanderlust. This could account for the dead seals sighted far inland, Skua gulls near the South Pole, hundreds of miles from food, or penguins marching bravely inland past their point of no return.

The study of ninety seals was carried out by Dr. Troy L. Pewe and Norman R. Rivard of the United States Geological Survey and Dr. George A. Llano of the National Academy of Sciences.

They found the carcasses in the numerous ice-free valleys that lie to the west of McMurdo Sound. Some were clustered in groups as large as nineteen. A few weeks ago a New Zealand expedition reported having seen ninety-nine more, some as far as thirty-five miles inland.

The Antarctic seals, unlike those familiar to circus-goers, are bulking animals that weigh many hundreds of pounds. They move over their native ice with ease, but over rocky, mountainous terrain only by dint of herculean efforts.

The American report stated that all but one of the identifiable carcasses had been of crabeater seals. The exception was a sea leopard. One Adelie penguin mummy was also found.

Earlier visitors have reported seeing at least one Weddell seal, but that species is equipped with teeth that can be used to bore through the sea ice.

Thus, after a freeze-over, a Weddell seal is able to live under the ice, yet come up for air. Crabeaters are unable to do this and normally ride out to sea on drifting floes before the winter freeze-up. Those found inland may have been caught by an early freeze and driven to a desperate quest for food.

One of the specimens found by the Americans at an elevation of 1,640 feet was dated, in terms of its content of radioactive carbon, at Columbia University's Lamont Geological Observatory. Its age was found to be between 1,600 and 2,600 years, as reported in the Sept. 18 issue of the journal Science.

An autopsy was performed on another specimen by Dr. Robert K. Enders of Swarthmore College. The meat was so dried out that he had to use a hammer and chisel. According to Dr. Pewe, virtually no fat was found, indicating that the animal might have starved to death.

While the seals, migrating Arctic lemmings and other animals may be driven to wander by hunger, the seeming illogic of their long journeys is not surprising, in Dr. Llano's view.

The hordes of lemmings that plunge into the sea are not intelligent enough to turn back, once they have swum to their point of no return. The same may be true of the penguins, skuas and seals sighted far inland.

The seal movements have also been described, in another theory, as a reversion to the behavior of their ancestors, who were land mammals.

Motor Guided Submarine

An outboard motor helped guide the nuclear submarine Skate to an opening in the ice over the Arctic Ocean, the National Geographic Magazine says. The motorboat—from an International Geophysical Year research station—circled in the open water. The submarine picked up its put-put-put on sonar equipment and surfaced in the small, ice-free lake.

Vandalism In Antarctica

CHRISTCHURCH, New Zealand, Nov. 6 (UPI).—The three most historic buildings in Antarctica have been despoiled by vandals, some of them classified as "very important person" visitors, the United States Navy reported today.

Both Americans and New Zealanders have removed food, clothing, sealskin boots, cutlery, ropes and shovels from two huts set up by British explorer Robert F. Scott and from a hut constructed by Sir Ernest Henry Shackelton, another British explorer.

The huts are regarded as monuments to brave men and present-day Antarctic explorers consider the souvenir-hunting raids on them as desecration.

NEW ERA LOOMS FOR ANTARCTICA

Tyree Envisages Permanent Human Habitation—Plans 'Deep Freeze' of 1960

WASHINGTON (UPI)—Rear Admiral David M. Tyree foresees an "era of development" for the Antarctic leading to permanent human habitation and a growing contribution to the science, communications and economy of the world.

Admiral Tyree became commander of the United States Naval Support Force, Antarctica, on April 14, 1959, succeeding Rear Admiral George Dufek, who was in charge of Operation Deep Freeze. Admiral Tyree also serves as United States Antarctic Projects Officer by Presidential appointment.

He is now making plans for "Deep Freeze 1960."

"We are approaching a new era in Antarctica, and looking to the future," Admiral Tyree said. "If the new international treaty is concluded, there will be a long period of international scientific cooperation.

"We would hope that in the years to come we could organize our efforts on an economic basis, and obtain the scientific knowledge that the world needs. Who knows what Antarctica may mean in the coming 'Space Age'?

"There will be a rising interest in the future need for air routes across Antarctica, such as have already been established in northern polar regions."

Admiral Tyree believes that nuclear reactors, to be used for heating buildings and for melting ice for clean water supplies, could greatly increase the possibilities of permanent human habitations at Antarctic bases. There is a chance that a nuclear reactor may be installed at the McMurdo Sound base early in 1961.

ADM. D.M. TYREE.

The admiral pointed out that for a century, world interest in Antarctica was directed chiefly at geographical exploration of the unknown continent. Later, there developed a combined interest in exploration and the advancement of scientific knowledge, culminating in the International Geophysical Year program of 1957-58.

"Now," he concluded, "we are on the threshold of what may be called an era of development, with prospects for completion of the exploration and many opportunities for advances in scientific and other peaceful enterprises."

Apart from his distinguished service as a line officer in the Pacific during World War II and the Korean conflict, Admiral Tyree is especially known in the Navy for his technical contributions to the field of explosives and propulsion materials. A graduate of Annapolis in 1925, he received a Master of Science degree at the University of Michigan in 1934 and also took advanced courses at the National War College.

His reputation for cooperating closely with scientists was an important consideration in his appointment as commander of naval support operations in Antarctica.

9-MAN TEAM STARTS TREK IN ANTARCTIC

WASHINGTON, Oct.17 (UPI)—A nine-man team, starting this year's exploration of the South Polar regions, was on its way into Victoria Land today, the Navy announced. The trek will last four months.

The party, headed by Frans Van Der Hoeven of the Netherlands, will be supplied by parachute drop during its 1,600-mile trip in oversnow vehicles. The route is from the New Zealand Scott Base at McMurdo Sound via Victoria Land to the Ross Sea Coast.

The antarctic expedition is making the first major traverse of this year's Operation Deep Freeze. The party also includes a New Zealander, a Frenchman and six Americans.

2 Russian Scientists Honored

MOSCOW, Aug. 31 (AP)—Two Leningrad geophysicists have received certificates from the American National Academy of Science for their work at the Little America Antarctic station, Tass has reported. The press agency says V. I. Rastorguev and P. D. Astapenko were cited for their "substantial contribution to the International Geophysical Year success."

U.S. GIVES RADIO HAM TRIP TO SOUTH POLE

The New York Times.

CLARK TOWNSHIP, N. J., Nov. 13—A ham radio operator, who has provided free calls home for Naval personnel in the Antarctic left yesterday on a trip to the South Pole area as a guest of the Navy.

The operator, Jules M. Madey Jr., a 19-year-old Rutgers University freshman, has been providing the service for four years from his home here. His mother, Mrs. Jules M. Madey, said he had been at his set "day in and day out" and had made friends with many of the men in Antarctica.

Rear Admiral David M. Tyree made the invitation to young Madey for the two-week trip.

"I am very conscious of the splendid work you have been doing through your radio station for our personnel and their families," Admiral Tyree said. "The value in morale and happiness is incalculable. We are very grateful.

"I assume your activities with our people have stimulated some interest and curiosity in you concerning the Antarctic. I know of no one who so completely deserves to have that curiosity satisfied."

The Navy is providing transportation and the necessary clothing and equipment.

49-STAR FLAG AT POLE

Antarctic Outpost Receives Banner From Alaskans

WELLINGTON, New Zealand, Nov. 22 (Reuters)—The United States station at the South Pole has received its first forty-nine-star flag, it was announced here today.

The flag, now flying in the center of a circle of fuel drums marking the geographical pole, was taken to the station by Rear Admiral David M. Tyree, United States commander, when he visited the outpost Friday.

The forty-nine-star flag was given to the station by the American Legion post at Anchorage, Alaska.

ANTARCTIC HEADACHES

U. S. Medical Officers Cite Cases Among IGY Men

Many American men stationed for months in the Antarctic during the International Geophysical Year suffered from constant headaches, according to Capt. Charles S. Mullin Jr., as reported by UPI.

Medical officers believe the headaches were an emotional reaction to the realization that feelings of aggression and hostility had to be controlled because of the close quarters.

Meteorologist Girds For Polar Challenge

By John C. Waugh

The Christian Science Monitor

McMurdo Sound, Antarctica

Edwin Flowers has returned to Antarctica for the long winter night, and it's as if he had never left.

Quiet, thoughtful Mr. Flowers will spend his second winter at the United States scientific station atop the geographic South Pole.

As a meteorologist, he was one of the first 18 men ever to stay the winter through at the pole. That was during the winter night of 1957. Now, two years later, he has returned, this time as the station's scientific leader. He will stay during the 1960 winter season.

Until 1956 only 10 men had ever stood at the pole, let alone tarried there for the winter.

Roald Amundsen, the Norwegian explorer, was the first man ever to reach the pole. His five-man party made the dash there in 1911. One month later the ill-starred Robert Falcon Scott and four companions reached the same goal only to find that Amundsen had already been there.

For nearly half a century afterward no man stood again at the pole until an American party, led by Admiral George Dufek, landed there in an airplane in October, 1956.

Courageous Captain Scott made one of the most heart-wringing utterances in the history of exploration the day he reached the pole and found himself beaten there.

He wrote in his journal: "This is an awful place and terrible enough for us to have labored to without the reward of priority. . . ."

Nearly 50 years later Edwin Flowers, a new breed of antarctic man, is able to say:

"It's a good place. There is beauty there in the twilight effects of the heliophenomena. The snow surface is carved by the wind into strange and pretty shapes. And a walk in the snow under an antarctic moon can be lovely."

This is beauty that Scott and his four gallant companions never saw at the pole. That Mr. Flowers is now able to enjoy it is symbolic of the great difference between life in Antarctica today and what it was in Scott's time.

Scott's were the heroic days of arduous treks across the ice and snow when men often manhauled sledges for hundreds of miles. To Mr. Flowers life at the pole now is uneventful and even routine.

Stopping en route at the Navy's air facility here at McMurdo Sound, Mr. Flowers talked freely of his past and future at the bottom of the world.

"I have the feeling," he says, looking around, "that I have never been gone. Nothing has changed."

What brings him back to Antarctica for another winter? What brings anybody back? For the long six months of darkness, which begins in March and do not end until September, all who winter in here are cut off from everything. Only radio links them to the outside world.

Mr. Flowers is a family man with a wife, Louise, and two young daughters, Janice and Patricia, back home in Pennsylvania.

But he looks an Antarctica as opportunity. He is a young man in the field of meteorology and already an expert in the pioneering field of antarctic weather. This is an opportunity for him to participate in an important way in an unusual meteorological program. As a meteorologist for the United States Weather Bureau, he is gaining experience in a highly specialized field. He is investing in his future.

Mr. Flowers believes high motivation must mix strongly in any man who comes to Antarctica to ply his trade.

"He must not come strictly to save money," says Mr. Flowers. "He can't come strictly for adventure either. He must be interested in the job he has come to do. There has got to be a strong sense of duty."

What of the life itself? Is it exciting? Is it adventurous? It's humdrum most of the time, says Mr. Flowers.

Probably one of the most exciting times is just prior to the antarctic spring in August, when the men know the sun will soon rise again. For many days in advance everybody at the station anticipates the sun's debut. And when it does rise it is a stirring sight. For the men it is almost a homecoming.

Did Mr. Flowers learn anything during his first stay at the pole that will help him during his second?

For one thing, he learned the value of being a pack rat.

"Before darkness fell," Mr. Flowers remembers, "Paul Siple (the scientific leader at the pole that first winter) made us haul inside every stick of wood and anything else lying around loose outside. We grumbled then. But we soon saw how wise Paul was. We used all that stuff before the winter was out. I will have us do the same thing."

What will the men do during the long winter night when temperatures dip past 100 degrees below zero? They will work most of the time. There are chores, scientific and non-scientific, to be done. Meteorology, ionospheric physics, auroral studies, seismic soundings, and geomagnetic measurements will occupy the nine physical scientists at the station. Maintenance and support will occupy the hours of the nine Navy men who will winter with them.

There are phonograph records to be heard, books to be read, and movies to be seen.

They tell the story in Antarctica of a wintering-in party at one base that saw a film so many times all hands memorized the parts. Before the year was out they turned off the sound track and took the various roles themselves.

U. S. to Set Up 3-Inch Marker Near South Pole

WASHINGTON, Nov. 6 (AP)

The United States will set up a permanent 3-inch bronze marker this winter at its station next door to the South Pole.

The disc will show that the station is at latitude 89 degrees 59 minutes 6 seconds south, longitude 24 degrees 8 minutes west, or 1,650 feet north of the South Pole.

The United States Coast and Geodetic Survey, which will erect the marker, announced the location today. It was determined from 52 sets of astronomical observations made during the Antarctic's long night by Maj. Palle Mogensen. He was the American scientific leader during the International Geophysical Year.

Maj. Mogensen made his observations through a slot in the roof of the station hut. At times the temperature was 100 degrees below zero outside the hut and zero inside the hut.

Food Flown to Antarctic Unit

AUCKLAND, New Zealand, Sept. 30 (AP)—A United States plane carrying Admiral David M. Tyree, commander of Operation Deep Freeze, took of today for McMurdo Sound in the Antarctic. The plane carried 100 pounds of mail and 600 pounds of fresh food for the Antarctic party of 191 men whose only contact with the outside world since March has been by radio.

Tractor Parachuted at Pole

CHRISTCHURCH, N. Z., Oct. 21 (UPI)—A nine-ton tractor, said to be the heaviest object ever parachuted into the Antarctic, landed safely yesterday at the United States south pole station, it was announced today. Five 100-foot parachutes cushioned the tractor's fall.

Team to Tackle Polar Puzzle

By John C. Waugh
The Christian Science Monitor
McMurdo Sound, Antarctica

The last piece of an old geological puzzle is about to fall into place on this enigmatic continent.

Is Antarctica split in two—east and west—by an ice-filled trough? Or does a neck of land join east to west and make them one?

For years, since men first plunged far enough into the heart of Antarctica to raise this question, it has tantalized explorers and geophysicists alike.

In December this year a team a four physical scientists will set out to settle the question once and for all. They will range northward by air up the 88th west meridian from the Horlick to the Sentinel Mountains—the region where a connection, if there is one, must lie.

What they find may constitute one of the most significant geological discoveries in the history of recent Antarctic exploration.

When the question is settled, geophysicists, for the first time, will have a reasonably accurate profile of the vast land mass that lies buried under thousands of feet of ice and snow.

Various snow and air-borne traverses over the past two years have drawn the profile steadily into sharper focus.

What Edward C. Thiel and Edwin S. Robinson, geophysicists, and J. Campbell Craddock and John J. Anderson, geologists, discover this season between the Horlicks and the Sentinels will complete the rough sketch. Snow traverses under way and projected for this and the coming season will fill in and embellish it further.

Dr. Thiel, an articulate geophysicist from the University of Wisconsin and a sturdy veteran of several Antarctic traverses, will lead this year's expedition up the 88th west meridian.

His traverse, a critical one of the 1959-60 summer season, will be air-borne. A Navy DC-3-type aircraft will drop him and his party at eight separate points along the meridian, beginning at the base of the northernmost range of the Horlick Mountains.

It will carry them up into an area where nunataks—mountain peaks jutting up through the mantle of ice and snow—have been reported. It will take them onto the snow surfaces between the nunataks. It will fly them into the rugged Sentinels, past the heavily crevassed foothills, which a snow traverse party two years ago failed to penetrate.

Landing at each point for several hours—or days, if necessary—the party will make seismic soundings to measure thickness of the ice and the bedrock below. It will study the geology of the nunataks, measure snow density and accumulation, and make gravity and magnetic measurements that will tell them the nature of the rock beneath the thick ice sheet.

During the traverse, Dr. Thiel and his team will establish one of two things.

If their measurements show that the rock surface under the ice rises above sea level, they will have proved that a neck of land links the Sentinels in the west and the Horlicks in the east. It will mean that Antarctica's two great regions are connected.

If their measurements show that the rock surface lies below sea level, they will have proved that east and west are unconnected, indeed, split by a continuous ice-filled trough running from the Ross Sea on the Pacific side of the continent to the Weddell Sea on the Atlantic side.

Western Antactica appears to be a rugged land, an archipelago of towering mountains and deep fiords not unlike present-day Norway. United States traverse parties since 1957-58 have fairly well established its profile.

The larger, less rugged eastern Antarctica appears to be a solid land mass beneath the ice. United States and Soviet traverse parties and the Commonwealth traverse led by Sir Vivian Fuchs in 1957-58 have all found that the eastern mainland rises uninterrupted above sea level all the way into the deep interior.

All this has been established. Only the last piece in the puzzle—the conecting link or lack of it—is now missing. This is what Dr. Thiel and his team are flying off to find.

ANTARCTIC MAIL HEAVY

Letter Volume Tells How Men There Spend Winter

WELLINGTON, New Zealand (Reuters)—If anyone ever wondered what men do when they spend the winter in the Antarctic, the answer was obvious when a Super Contellation arrived back in New Zealand from a flight there.

On board was 7,360 pounds of mail bound for all parts of the world.

First Living Insects Found In Antarctic

WASHINGTON, Dec. 9 (UPI).—The Navy announced today that a large variety of jumping fleas are the first living insects found in the Antarctic.

The insects, called "snow fleas" or "springtails" because of their ability to jump several inches by using their tails, —were discovered by Dr. George Meyer under dry rocks at Hallett Station in the Antarctic.

Dr. Meyer, a bacteriologist, said he scooped up sixty specimens in fifteen minutes. Hallett Station is 340 miles north of McMurdo Sound, main base for the Navy's Operation Deepfreeze.

The fleas, black and wingless, are an eighth of an inch long. A few living specimens of much smaller mites, near-relatives of insects also have been found in the Antarctic.

Icebreaker Sails

BOSTON, Nov. 3 (AP).—The USS Glacier, the Navy's largest icebreaker, left Boston yesterday to take part in the fifth consecutive Operation Deep Freeze in Antarctica. She carried 339 officers and men.

COOKIES FOR CREW

Icebreaker Off for Antarctic With Yule Reminder

BOSTON, Dec. 1 (AP)—The Coast Guard icebreaker Eastwind left for Antarctica today, carrying 2,400 frozen cookies in cases marked "Do Not Open Until Christmas."

The cookies, a dozen each for the 200 crewmen and civilians aboard, were baked by the Coast Guard Officers Wives Club. The ship will be in mid-Pacific at Christmas.

The Eastwind will take part in Operation Deepfreeze 60 to resupply United States scientific outposts.

Eight small Christmas trees were also brought aboard.

U. S. Plane Falls in Antarctic

CHRISTCHURCH, N. Z., Dec. 25 (UPI)—A United States Navy R-4-D-8 plane crashed at Byrd Station in the Antarctic Wednesday morning. The pilot, Lieut. Garland M. Renegar of Statesville, N. C., suffered minor injuries and the rest of the crew was not hurt, the Navy said.

Too Cold for Snow

Only two inches of snow in a year has been measured at the South Pole, where extremely cold air does not produce heavy precipitation.

2 CAMP BUILDINGS ARE GOING TO POLE

Self-Propelled Vehicles Have Range of 1,700 Miles for Exploration in Antarctica

By WALTER SULLIVAN
The New York Times.

Dec. 22

Two self-propelled camp buildings are on the way to Antarctica. They are the largest vehicles sent by the United States to the South Pole since the ill-fated Snow Cruiser was carried south in 1939.

Three Soviet 'Kharkov Chanka' snow vehicles are nearing the pole on the first trail-blazing leg of their transcontinental journey. They were sighted by an American plane a few days ago, some 200 miles south of Vostok, the Soviet station at the Geomagnetic Pole.

The Russian vehicles weigh thirty-four tons apiece. They are three times as heavy as the American vehicles and almost as large as the Snow Cruiser.

Two other American tractor parties, in recent days, have reached points deep in unexplored territory. One is close to the shore of the Amundsen Sea, where no man has ever set foot, but at last report was pinned down by a blizzard.

The new American vehicles are an enlargement of the Tucker Sno-Cat, which has become a standard means of Antarctic transport.

The interior of the enlarged version is 24 feet long, 8 feet wide and 9 feet 11 inches high. One carries five bunks and a scientific laboratory. Its twin holds a kitchen, dinette and snow melter. Most important of all, the vehicles will be self-sufficient for distances up to 1,700 miles or more.

This means they should be able to operate an entire summer season without air support. Their first great journey is to cover 1,200 miles during the southern summer of 1960-61, which coincides with the Northern winter.

Dr. Albert P. Crary, chief scientist of the United States Antarctic Research Program, under the National Science Foundation, said yesterday that the final route of this traverse had not yet been decided. The tentative plan, he said, was to go up the Skelton Glacier and head for the area between Vostok and the Pole.

The self-propelling camp would then roll past the Pole toward the Horlick Mountains. A primary task of this cavalcade, as with other tractor groups on the Antarctic ice sheet, will be to measure its thickness. The 250-mile stretch from the Pole to the Horlick Mountains is completely unexplored .

Because this leg is the most interesting it may prove economical to airlift the out-sized Sno-Cats to the Pole in C-130 air transports. These newly developed turbo-prop planes are expected to make their debut in Antarctica next month. They are fitted with a combination ski-wheel landing gear.

The two new vehicles are aboard the transport Private John R. Towle. Each weighs eleven and a half tons, roughly one-third the weight of the Snow Cruiser. It had been hoped that the latter, with a small plane riding its back, could voyage almost anywhere in Antarctica, but its weight was so great that it dug its own grave in the polar snow.

The new vehicles have such broad tracks that their pressure on the surface is only one and a half pounds per square inch.

The safety record of the original Sno-Cats has been excellent. Dr. Crary believes the recent loss of a New Zealander when a Sno-Cat fell down a crevasse on the ice shelf south of McMurdo Sound was the first such fatality.

The outsized variety was built at Medford, Ore., under the direction of the Antarctic Research Center of the University

One of the American parties now on the trail is nearing the route taken by a French party from Geology Point. In addition to sleds laden with food and fuel, it is dragging a bulbous rolligon, consisting of two fuel tanks, shaped like fat inner tubes, mounted on a short axle. The device, which carries 1,000 gallons of Diesel oil, has apparently been successful and Dr. Crary hopes it will extend the range of next year's traverses.

The other American party, based at Byrd Station, is nearing the Amundsen Sea.

The Soviet party, with three Kharkov Chanks vehicles and four sleds, left Vostok on Dec. 8 for the Pole. According to the most recent report of its plans, it is to go from the Pole to Station Sovietskaya and thence to the Atlantic Coast at Station Lazarev. This last leg may not be undertaken until next summer.

The New York Times Dec. 22, 1959

Tractor parties of the United States and the Soviet Union are deep in unexplored territory. Crosses show latest known positions. Projected tractor routes also are shown.

NAVY DECORATES DUFEK

Retired Admiral Honored for Loading Antarctic Forces

WASHINGTON, Nov. 23 (AP)—Retired Rear Admiral George J. Dufek, one of the Navy's top experts on the Antarctic, received a medal from his former chief today.

Admiral Dufek, who retired on Aug. 31, also disclosed that he had taken on two jobs as a consultant, both involving the Antarctic.

For four months of the year, he said, he will help the Pacific Division of Pan American World Airways prepare for commercial air routes across the South Polar zone.

Most of the remainder of his time, Admiral Dufek said, will be spent helping the American Locomotive Company of Schenectady, N. Y., plan for the operation of nuclear reactors in remote areas.

Icebreaker Cargo Mishap

WASHINGTON, Dec. 9 (AP) —The Navy today reported an explosive deck cargo of helium and gasoline containers had broken loose on the icebreaker Atka in heavy seas Monday near New Zealand. Four helium bottles were lost overboard before the cargo was secured. The Atka is bound for the Antarctic. Helium is not ordinarily explosive but the Navy said it had been dangerous in this case because it had been under heavy compression.

Polar Ice Hampers Work

Everyday mechanical tasks turn into major problems in the icy polar regions. The men who braved Antarctic wastes during the International Geophysical Year often had to work with rubber or plastic covered cables chilled by the low temperature to metallic hardness, says the National Geographic Magazine. A simple welding job could take hours of preheating and gradual cooling.

1,200-Year-Old Ice

Scientists at Byrd Station in the Antarctic have drilled more than 1,000 feet down to recover cores of ice that fell as snow about 700 A. D.

RUSSIANS ACCEPT POLAR EXCHANGE

Will Send a Scientist to U. S. Antarctic Base—American Going to Soviet Station

By WALTER SULLIVAN

The New York Times.

Dec. 25

The Soviet Union has agreed to resume the exchange of scientists between the Russian and American expeditions in Antarctica.

Gilbert Dewart of the California Institute of Technology is on the way to Mirny, the chief Soviet base in Antarctica.

His Russian counterpart, who will be stationed at the United States Naval Air Facility on McMurdo Sound, has not yet been named. However, the Soviet scientist is expected in New Zealand next month for transportation to the Antarctic.

The exchange is in the spirit of the twelve-nation treaty on Antarctica that was signed in Washington at the start of this month.

Soviet approval came through barely in time to complete arrangements for the coming year. Most of the ships seeking to penetrate the ice during the southern summer — coincident with the northern winter—are already on their way.

The exchange program was suspended a year ago after it had been carried out for two years under the auspices of the International Geophysical Year.

Both the Soviet and American expeditions seemed to feel that the exchanges had been valuable, and the suspension was attributed to misunderstanding and bureaucratic difficulties. Nevertheless, the Soviet delay in accepting the plan for this year had led to fears that the exchanges might not be resumed.

The Antarctic treaty provides a spot-check type of inspection system to monitor its ban on military activity. Some of the participating scientists have felt, however, that the exchange of resident scientists was the best way to avoid suspicion of clandestine activity.

For the first two years the Soviet exchange scientists were weather men stationed at the International Weather Central in Little America. This unit, which compiles maps and makes forecasts for the entire continent, has now been relocated in Australia.

The specialty of the Russian who will be at McMurdo Sound is not known, but he may also be a weather man.

Gilbert Dewart is a specialist in seismology, the science of earthquakes. He served in that capacity at Wilkes Station during its first year of occupation under the I. G. Y. program. Wilkes is the nearest base east of Mirny. At Mirny he will also be concerned with gravity observations.

Mr. Dewart attended Phillips Exeter Academy in Exeter, N. H., and was graduated from the Massachusetts Institute of Technology in 1953. The next year he obtained his master's degree in science at M. I. T.

He is to travel from Capetown to Mirny aboard the Soviet ship Kooperatsia. He will probably stay at Mirny slightly more than one year.

The first two American observers at Mirny were Gordon Cartwright and Morton Rubin, both of the United States Weather Bureau. Before Mr. Rubin left, early this year, he visited virtually all of the Soviet outposts in the interior of Antarctica.

The current exchange arrangement has been made by the National Science Foundation, which is now responsible for the American scientific program in Antarctica, and by the Soviet Academy of Sciences, which controls Soviet activities there.

WHALING UNIMPAIRED

Australian Clarifies Views of London Conference

CANBERRA, Australia — Charles F. Adermann, Minister for Primary Industry, said here that the whaling industry had not been endangered by decisions reached at the annual London meeting of the International Whaling Commission.

"The season for taking humpback whales has not been extended, although it has been altered from the first four days of February, 1960, to four days beginning Jan. 20," Mr. Adermann said. "Australian whaling stations depend almost entirely on humpbacks, and the International Whaling Commission has maintained the protection it gives to these animals, he added, according to the Australian News and Information Bureau.

Arctic and Antarctic Bird

The Arctic tern, after nesting each summer in the Canadian Arctic, flies some 11,000 miles for the summer in the Antarctic.

Navy to Explore Impenetrable Sea

Two Navy icebreakers this winter will explore the Impenetrable Sea.

This is the Sea of Bellingshausen, broad arm of the Antarctic just southwest of the Palmer Peninsula, the northern extension of the polar continent towards South America.

In 140 years, since Admiral Fabyan von Bellingshausen of the Russian navy first sailed into its icebergs and hovering phantoms with two wooden ships, no vessel ever has been able to reach its shores. At least 10 expeditions have followed Bellingshausen's trail, but with little more success.

The sea is especially notable for fantastic optical phenomena, phantoms, the "looming" of shore mountains. Particularly abundant are the so-called parhelia and parselene. These appear as refractions of the sun or moon, respectively and take the form of symmetrically arranged floating rings and mock images of many colors. Sunrise and sunset appear as high arches with the colors of the spectrum extending from the top of the arch to the horizon opposite the sun.

Solar and lunar halos are produced by refraction and reflection through and from ice crystals, and appear as rings, mock images, contra images and zenith circles. Solar corona appear as several rings, white to brown in color.

There are many "fog bows" due to the refraction of water particles. They are related to rainbows, the colors varying with the size of the cloud droplets. The smaller the drops the lighter the colors, extending to "white rainbows."

Iridescent clouds are brighter than other forms of light phenomena and appear as a deep blue central tract with banded margins of vivid purple, orange and green.

Earth shadows are believed to be produced by mountain peaks, and take the form of dark blue bands projected into the sky. Auroras are frequent.

All these may be seen in other parts of Antarctica, but are much more frequent in Bellingshausen's Sea, the world's true never-never realm.

Winds generally are violent. There are only about 50 days a year of calm or feeble winds. The air is saturated with water vapor, which settles down as fog or snow. Humidity usually is above 90 percent. Snowfall or ice deposits from fog have been recorded 257 days of the year, and drizzling rain on 14 days. The sky is almost constantly obscured by clouds or low mists.

Actually the region is not very cold during the Antarctic summer. Temperature often rises above freezing.

In the sea are two large and still mysterious islands, Peter I and Alexander I, first placed on maps by Bellingshausen and seldom visited since. The first, seen by the Russian admiral from a distance of about 15 miles, is entirely covered with ice. No bare rock is visible, except where slopes are very precipitous. The most notable feature is Lars Christiansen Peak, about 4,000 feet high, the rounded dome of an extinct volcano.

Several glaciers terminate at the shore in the form of flat ice cliffs. The seaward edge of some of these appear to be floating.

It was not until 1927—more than a century after Bellingshausen—that the island first was visited by a Norwegian whaler.

Considerably larger, essentially at the entrance to the sea of phantoms, is Alexander I Island, about 235 miles long and 150 miles wide, traversed by three great mountain ranges reaching elevations of more than a mile. This island is not especially difficult to approach.

The sea contains very few lakes of open water such as are not uncommon in the larger Ross and Weddell seas and the ice pack, which seems like part of the continent usually is exceptionally thick. It has for the most part been impenetrable to exploring ships in the past but, it is believed, should afford much less difficulty to the Navy's powerful new ice breakers which can slash their way through a ten-foot pack almost as if it were tissue paper.

It is expected to get the expedition under way as soon as possible after the start of the brief Antarctic summer about Jan. 1. Possibility of discovering any new land is considered remote, although some now unknown islands may be added to the map.

The Biggest Penguins

The emperor penguin, largest of many penguin species, may stand as high as three feet.

Walrus Statistics

A full-grown walrus will measure ten or eleven feet and weigh more than a ton.

Ice Shelf Geology Explored

By John C. Waugh
The Christian Science Monitor

McMurdo Sound, Antarctica

The largest chunk of floating ice in the world rides at anchor in Antarctica.

It is called the Ross Ice Shelf. Its size alone makes it magnificent. And its historical role as a gateway to a continent has made it famous.

Sir James Clark Ross, sailing in the British ship Erebus, in 1841, discovered it. Capt. Robert Falcon Scott camped at its edge in 1901 and launched his celebrated "furthest south" expedition across its face. He later came to a tragic end in its unforgiving snows.

Sir Ernest Shackleton marched across it on his way southward in 1908, and Roald Amundsen crossed it on his triumphant dash to the South Pole in 1911. Admiral Richard E. Byrd built his Little Americas at its edge.

Two present-day Antarctic scientists, Dr. Edward C. Thiel, of the University of Wisconsin, and Edwin S. Robinson, of the University of Michigan, have studied it closely.

"The shelf," says Dr. Thiel, "is about the size of Texas. And this makes it the largest truly flat place on earth."

It is virtually featureless except for windswept sastrugi, ridges of hardened snow that hump jaggedly up across its face.

Its seaward front extends 400 miles athwart the Ross Sea on the Pacific side of the continent. At its deepest, it reaches 500 miles inland from the sea.

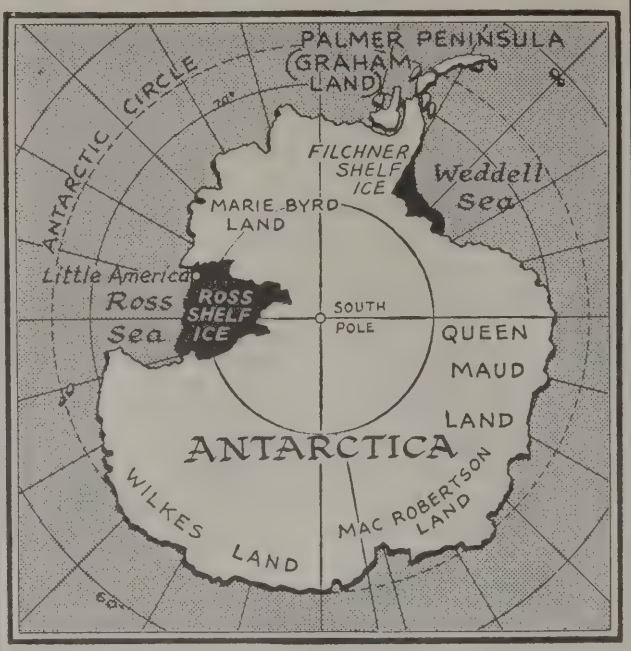
Its ice ranges in thickness from 800 feet near the edge of the Ross Sea to about 1,500 feet at the foot of the great network of glaciers on the continent's rim. The shelf is fed by the ice of these magnificent glaciers and from the snow that falls and hardens on its face.

The nature and characteristics of the Ross Ice Shelf are only now becoming accurately known. An oversnow traverse party, led by Dr. Albert P. Crary, roamed across 1,450 miles of its face during the Antarctic summer of 1957-58. The data gathered then are still being analyzed and interpreted.

But what is already known makes a striking portrait.

Most of the shelf's great mass floats on the water, though in several locations it is grounded.

Dr. Thiel and Mr. Robinson recently proved that the shelf heaves up and down ever so slightly with each ebb and flow of the tide beneath it. At the sea's edge it oscillates gently with the action of the waves. The sea on which it floats extends downward from the bottom of the ice to as deep as 4,400 feet.



One of the shelf's most spectacular characteristics is the fashion in which it gives birth to icebergs. Huge tabular bergs the size of the state of Rhode Island are known to have "calved" off from the seaward edges of Antarctic ice shelves.

No man ever has reported seeing a berg so massive actually breaking away. But a party in the early 1900's witnessed the calving of a lesser one and reported that it sounded as if "hundreds of heavy guns had been fired at once."

The Ross Ice Shelf is not the only great slab of ice hinged to the shores of this continent. Across Antarctica on the Weddell Sea side lies the Filchner Ice Shelf, a partially floating body of ice about two-thirds the size of the Ross Shelf.

Around the edge of the continent many lesser shelves and ice tongues cling to the land. All these together form the great iceberg factories of Antarctica.

The edge of the Ross Ice Shelf creeps seaward at an astonishing rate of speed. Dr. Thiel and Mr. Robinson estimate it moves outward five feet a day. A massive calving will set it back again many miles. But then it resumes its steady creeping immediately.

The study of this great natural wonder is renewed each summer season. Mr. Robinson, who was a member of the Crary traverse party, and Dr. Thiel have been carrying on local measurements this season from the Naval Air Facility here at McMurdo Sound.

James H. Zumberge, professor of geology from the University of Michigan, soon will begin a long-term study of the shelf. His study will concentrate on the nourishment, wastage, movement, and deformation of the shelf.

The shelf affords an excellent laboratory for the study of rock deformation. Ice is considered a rock by structural geologists. And marked deformation, which takes ages in ordinary rock, occurs quickly in shelf ice—within a time scale that a human lifetime can span. So men, by observing the Ross Ice Shelf, can witness natural forces at work that are observable nowhere else on earth.

Magnetic Rocks Called Australia-Antarctic Tie

By Reuters

Wellington, N. Z.

Magnetic rocks discovered by a New Zealand research team in Antarctica last year could be one of the most significant geological discoveries of recent years, Dr. C. B. B. Bull reports here.

In his report to the Victoria University Council here, Dr. Bull said the rocks could add another link in the chain of evidence suggesting that Australia was once joined to the Antarctic Continent.

Findings of the expedition and further laboratory tests probably will be submitted to the Helsinki Conference of the International Union of Geodesy and Geophysics next June, Dr. Bull said.

ANTARCTIC STUDIES SET

New Zealand Now Recruiting for New Exploration

WELLINGTON, New Zealand, Aug. 31, (Reuters)—The New Zealand Government is getting ready for new exploration in the Antarctic during the summer season starting in November.

Recruiting is under way for teams of scientists, surveyors and climbers to carry out the program of land and sea exploration.

Over the last three seasons, about 44,000 square miles of the Ross Dependency have been covered by the New Zealand trans-Antarctic expedition and two expeditions from the Geological Survey, the Lands and Survey Department and Victoria University of Wellington.

New Zealand will continue to man Scott Base in 1960, and again will join the United States again in manning Hallett Station.

TWO SAVED IN POLAR ICE

3d New Zealander Is Killed in Fall Into Crevasse

WELLINGTON, New Zealand, Nov. 20 (Reuters)—Two geologists were rescued today after a twenty-hour ordeal in the frigid depths of an Antarctic crevasse, but a third member of the expedition was found dead.

Disaster struck the men yesterday about 180 miles from Scott Base when their snocat tracked vehicle fell 100 feet down a nine-foot-wide crevasse.

Lieut. Tom Couzens, 28-year-old member of the Royal New Zealand Armored Corps, was killed.

The two geologists, Bernie Gunn, 33, one of New Zealand's top Antarctic explorers, and John Lowery, 27, were trapped in the crevasse in below-zero temperatures until a search party arrived early today.

Food and hot drinks were lowered to the men while the rescuers worked for more than nine hours to free them.

Britain Maps Polar Research

LONDON, Oct. 17 (AP)—Britain plans to spend more than $2,000,000 on research in the Antarctic next year. One ship is on its way there and two will sail later with fresh teams of scientists to continue work under way.

Windiest in World

Winds up to 200 miles an hour make Commonwealth Bay in Antarctica the windiest spot in the world.

ANTARCTIC UNIT NAMED

Australia Picks Team for 1960 Research Expedition

CANBERRA, Australia—Sir Garfield Barwick, acting Minister of External Affairs, said here that personnel for the 1960 Australian National Antarctic Research Expedition had been selected and were gathering here for preliminary training, according to the Australian News and Information Bureau.

During the forthcoming year, fifteen men will be stationed at Macquarie Island, twenty at Wilkes Land, nine at Davis and thirty-two at Mawson, the main Australian permanent Antarctic research station.

Four United States scientists will accompany the party to Wilkes, which would continue basic scientific studies developed for the International Geophysical Year, Sir Garfield said.

An Antarctic flight of twelve men would be stationed at Mawson to fly the expedition's aircraft in the projected acceleration of mapping and geological survey of the hinteriand of MacRobertson Land and Enderby Land.

RESCUED IN ANTARCTIC

Ill Australian Is Flown 1,250 Miles in U. S. Navy Plane

McMURDO SOUND, Antarctica, Dec. 4 (UPI)—A United States Navy P-2V skiplane completed a mercy mission with a safe radar landing in a snowstorm here last night.

The twin-engined Neptune flew 1,250 miles over the unmapped snow and ice of Wilkes Land to the Australian base on Vincennes Bay to pick up an Australian tractor mechanic who had suffered a nervous breakdown.

Comdr. Loyd E. Newcomer of Russell, Kan., landed the plane on an improvised airstrip eight miles from the Australian base. The Australian will be flown out to New Zealand.

The Russians flew a physician 500 miles from their base at Mirny to attend the mechanic while he was awaiting the arrival of the United States aircraft.

Argentina Tries Ice Storage

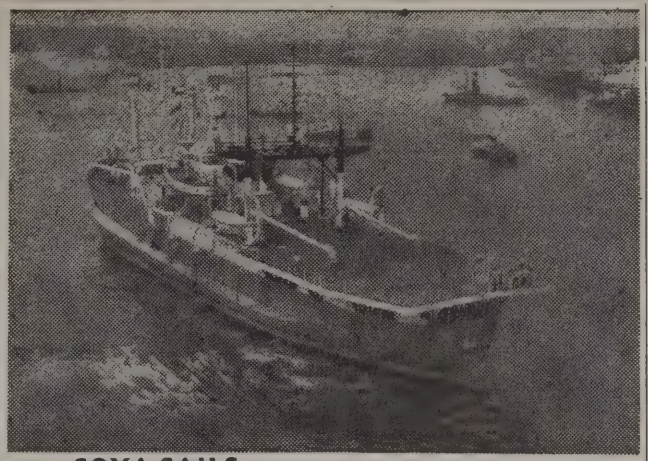
BUENOS AIRES, Nov. 21 (AP)—Argentina plans to bury four quarters of beef in the Antarctic ice to see if the region can be used effectively as a cold storage depot.

French Antarctic Research

PARIS, Sept. 16 (Reuters)—France will continue research in the Antarctic next year, it was announced today.

Antarctic Flier

The first man to use an airplane over Antarctica was Britain's Hubert Wilkins in 1928.



SOYA SAILS: The remodeled Antarctic expedition ship Soya left Tokyo on its fourth voyage to the Antarctic.

Oct 31

The 4,848-ton icebreaker sailed at 10.15 am with the intention of covering the 41,000 kilometers round trip to Showa Base on Ongul Island off Prince Olaf Coast and back in 177 days.

It is scheduled to enter the Antarctic Sea about December 28 and will try to approach the Japanese base as close as possible in order to replace the wintering team on tiny island.

The vessel will try to pull out from the icy sea around February 21 returning to Tokyo on or about April 24.

Equipped with a large helicopter landing deck, the icebreaker is manned by 94 crew members under the leadership of Captain Sueichiro Akita, former chief navigator of the Soya in two previous expeditions. Akita replaced former skipper Mitsuji Matsumoto.

Aboard the ship besides the crew are 36 members of the expedition party led by Dr Tatsuo Tatsumi, professor at Tokyo University and 11 Karafuto huskies. Tatsumi replaced Dr Takeshi Nagata, who commanded the three previous expeditions.

As the ship nears Ongul Island, it will airlift the third wintering team, consisting of 12 to 15 men including Dr Tetsuya Torii, the leader, and will pick up the 14-man second wintering party.

Education Minister Takechiyo Matsuda in his address at the ceremony wished the crew and the expedition team every success in the current venture

Base for Icebreaker

TOKYO, Nov. 13 (AP).—Japan's Antarctic expedition's general headquarters said it has approved Soviet use of the Japanese base at Ongul Island as a refueling station. It will accommodate the Soviet icebreaker Ob.

Explorer Says Nagging Can Drive Man to Pole

BUENOS AIRES, Nov. 23 (Reuters) — Nagging wives, impossible marriages and fatigue from "keeping up with the Joneses" were listed today as some of the reasons why men went to live in the frozen wastes of the Antarctic.

Dr. Philip Law, an Australian doctor with twelve years of experience on polar expetitions said men escaping from wife trouble were not usually good workers and aggressive men were a menace.

Others who do not fit into modern society often become happy and secure in the Antarctic where there is a classless society with no concern for social status, he said.

Dr. Law gave these findings in an address at a twelve-nation International Geophysical Year sumposium here.

SHIPS TO REVISIT POLE

Australia Recharters Two for Antarctic Expedition

CANBERRA, Australia — Richard G. Casey, Minister for External Affairs, announced that the polar vessels Magga Dan and Thala Dan had again been chartered for use by the Australian National Antarctic Research Expedition during the next two Antarctic summers, according to the Australian News and Information Bureau.

The 1,800-ton, thirty-six passenger vessels, which were used by the expedition last summer, will deliver relief parties and stores to Mawson, Wilkes, Davis and Macquarie Island permanent Antarctic research stations, and carry out further exploration of the coast of the Australian Antarctic territory, Mr. Casey said.

SHIPS STUCK IN ICE

2 Expeditions Are Stalled on Way to Antarctic

ABOARD THE MOTORSHIP POLARBJORN, Dec. 29 (Reuters—Heavy pack ice driven by an easterly wind today held the Polarbjorn, carrying a South African Antarctic expedition to the South Pole, in its grip 150 miles from the coast of Anarctica.

The ship tried to crash through an ice barrier late Sunday when the ice suddenly closed in and jammed the ship between two floes.

Word was received a few days ago that the Danish ship Erica Dan, carrying a Belgian relief expedition to Antarctica, also was stuck fast in the ice about 1,000 miles east of the Polarbjorn.

ANTWERP, Belgium, Nov. 22 (Reuters)—A twenty-member Belgian Antarctic expedition left here on board the Danish vessel Erika Dan today.

FIRE IN ANTARCTIC

Flames Destroy Australian Auroral Observatory

MELBOURNE, Australia—A radio message received at Australian Antarctic (Department of External Affairs) Division headquarters here reported destruction by fire of the Australian auroral observatory at Taylor Glacier, about fifty miles west of the main Australian permanent scientific research station at Mawson, according to the Australian News and Information Bureau.

The observatory, established at considerable effort two years ago to carry out meteorological, auroral and biological studies, was manned by a physicist and a weather observer, a spokesman said here. Both men, badly affected by fumes of chemical fire-extinguishers used to fight the blaze, were flown to Mawson for treatment.

The fire was caused by the ignition of fumes from gasoline that had been accidentally spilled. It caused the loss of valuable auroral instruments, films and records, as well as radio equipment, clothes, bedding and utensils.

Group Off to Antarctic

CAPETOWN, South Africa, Dec. 3 (Reuters)—South Africa's first Antarctic expedition left here tonight by ship for its basein Queen Maud land.

Leviathan of the Deep

The much-hunted blue whale, large whale species, can grow more than 100 feet long and weigh up to 150 tons.

ANTARCTIC RANGE RICH IN MINERALS

Russians Explore 'Paradise' Where 'Needles of Rock' Reach Toward Sky

WASHINGTON, Aug. 1 (UPI) —Russians have discovered and explored a mountain wilderness in Antarctica described as "a geological paradise" rich in valuable minerals.

The Soviet scientists named the 600-mile range, part of a rugged region in Queen Maud Land, "the Russian Mountains." They said the range looked more like "a landscape of the moon" than any earthly scene.

An article on the newly mapped mountains, published in Moscow, has been translated and distributed here.

Four Soviet geologists spent ten days exploring the mountains with a light airplane. From a distance some of the peaks appeared "translucent like rock crystal." Gigantic "needles of rock" pierced the sky. One mountain was a monolith of granite resembling a 100-story skyscraper with "windows" consisting of scattered areas of white quartz.

Among useful minerals found by the Russians were mica, graphite, iron and apatite, a source of phosphorous compounds.

They also discovered numerous rare minerals not otherwise identified.

Defying blizzards, winds and extreme cold, the Russians collected samples of what they said were the planet's most ancient rocks and of sedimentary minerals laid down by "the oldest seas of the earth."

They reported steep cliffs hundreds of yards high alternating "with higher peaks resembling sharpened pencils." They saw other peaks resembling "strange wild beasts, crumbling fortresses, or fantastic trees."

"Some ranges resemble caravans of camels, and others look like ruins of cities," the geologists said. "The scenery has an almost unearthly aspect; it seems like a landscape of the moon."

They found great blocks of rock that had been polished by rubbing against one another "to mirrorlike smoothness." There were rocks "of rose-colored granites, others of snow-white marble."

"The marble is so saturated with various crystals," the geologists said, "that the rocks represent a natural mineralogical museum."

As a result of their explorations, the report said, "the first schematic geological map of the eastern part of Queen Maud Land will be published."

The New York Times Aug. 2, 1959

DISCOVERY: Russians report finding a new range of mountains (cross).

Antarctic Sites Named

LONDON, Nov. 16 (Reuters) —Soviet scientists have named two mountain ranges and a valley discovered by seismic soundings under the icecap in East Antarctica, the Soviet news agency Tass said today.

This is the first time in the history of Antarctic exploration that names have been given to geographical points hidden from sight by the vast ice cover.

A mountain range stretching for 230 kilometers (143 miles) under ice near the Soviet Pionerskaya station in Queen Mary Land has been named after after Boris Golitsyn, Russian physicist and seismologist.

Beyond the Golitsyn Range, a subglacial plain stretching for about 500 kilometers (310 miles) has been named for the Russian mathematician Otto Schmidt, who died in 1956.

A second mountain range, 800 kilometers (496 miles) long, has been named the Gamburtseve Mountains, after a Soviet geophysicist.

ANTARCTIC SITE LOANED

Norway Gives Post for South African Science Study

Under a bilateral agreement, signed in London, Norway will loan its scientific research station in Antarctica to the Union of South Africa for an unspecified period, the Norwegian Information Service reported.

A few days later, Norway gave South Africa permission to use Bouvet Island as a meteorological station. The island is midway between Capetown and Antarctica.

Norway Station, located in Queen Maud Land, will be placed at the disposal of South Africa for such time as may be needed to conduct scientific observations. Either party will have the right to call for a revision of the pact.

All buildings and facilities, including the shortwave radio antenna, will be lent to South Africa without compensation. Radio equipment, some scientific instruments, together with three tractors, thirteen huskies, dog and tractor sleds, will be transferred at specified prices.

The agreement also covers transportation of the South African expedition to Antarctica aboard the Norwegian sealing vessel, Poloarbjorn.

CAPETOWN, South Africa, Dec. 3 (Reuters)—South Africa's first Antarctic expedition left here tonight by ship for its basein Queen Maud land

Russians Begin Polar Trek

LONDON, Sept. 17 (Reuters) —Two Soviet snow tractors with twenty-four tons of freight have left the Russian Antarctic base at Mirny for a four-month trek across nearly 937 miles of ice to the Vostok post, The Soviet press agency Tass said today.

MOSCOW, Nov. 29 (Reuters) —The tractor train of the Soviet Antarctic expedition today completed the first leg of its trek across the icebound continent, the Soviet press agency, Tass, reported here.

It said the train, consisting of three snow vehicles, two crawler tractors and ten sledges loaded with supplies, reached the Vostok Station at the geomagnetic pole after a twenty-three-day, 320-mile trek from the Komsomolskaya Station.

Seals, Whales Need Air

Seals and whales, true mammals adapted to the sea, must come to the surface for air.

No Ulcers At South Pole

VANCOUVER, B. C., Oct. 21 (CP).—An extended stay in Antarctica is just the thing for ulcers, a British scientist reports.

"A person there is incredibly single minded," Dr. Tom Hatherton said on arriving here from the South Polar area, where he spent two of the last four years.

"You live in the place where you work. It is a rest from the vicissitudes of civilization. You don't have to worry about seeing your bank manager, making time for a haircut, trying to arrange insurance payments or making numerous decisions—like which bar to drink in. There is no worry."

WOMEN FOR ANTARCTIC

Australia Names 4 Who Will Join Research Base Staff

MELBOURNE, Australia — Australian Antarctic (Department of External Affairs) Division headquarters has announced here that four women scientists would travel to Australian permanent Antarctic scientific research station at Macquarie Island on the Antarctic relief ship Thalia Dan, according to the Australian News and Information Bureau.

They were Miss Isabel Bennett of Sydney University and Miss McPherson of the National Museum of Victoria, who would study animal and plant life on the island; Dr. Mary Gillham, a British botanist, and Susan Ingham of the Antarctic Division.

This would be the first time that women had traveled with an Australian Antarctic expedition, a spokesman said. After spending two weeks on Macquarie Island, about 1,200 miles would return on the Thala Dam with the party now at the station.

PENGUIN DISCOVERY

Largest Known Rookery of Emperor Type Is Reported

MELBOURNE, Australia—A spokesman for the Australian Antarctic (Department of External Affairs) Division said here that a radio message received from Mawson, largest of four permanent Australian scientific research stations in the Antarctic, revealed that an Australian party had discovered what was believed to be the largest known Emperor Penguin rookery.

The Emperor is the largest of all penguins.

The rookery, of about 18,000 birds, was discovered about thirty-five miles east of Mawson by a three-man party during a twelve-day journey over sea-ice by dog-sledge, the spokesman said, according to the Australian News and Information Bureau. During the journey, the party was confined to its tents for five days by a blizzard, with temperatures 20 degrees below zero and wind velocities of ninety miles an hour.

Soil for Antarctica

LENINGRAD, Oct. 29 (AP). —Soil for electrically heated hotbeds will be sent shortly to the Soviet Morny observation in Antarctica to allow the staff to grow fresh vegetables, the Soviet news agency Tass reports.

U.S. BASE AT POLE FETES RUSSIANS

Soviet Explorers Rest After First Leg of Antarctic Trek —Western Film Shown

WELLINGTON, New Zealand, Dec. 27 (Reuters)—Americans manning a research base at the South Pole are thawing out sixteen Soviet explorers with warm hospitality following a Soviet trek across the frozen continent.

The Russians pitched into an American-style meal and then watched a John Wayne Western movie at the polar base after their arrival yesterday from the Indian Ocean coast.

Messages reaching here today from Antarctic bases and from the Soviet press agency, Tass, indicated the Russians were luxuriating in most of the comforts of an American home after their trail-blazing, 1,680-mile journey.

The leader of the group, which covered unexplored mountain ranges 10,000 feet high and passed through 50-below-zero cold, radioed thanks to the commander of United States Antarctic operations for the "very warm hospitality" at the base.

A Navy cook, Ted Miller of Lynch, Ky., served up a hefty meal of cereal, eggs, pork chops and fried potatoes for the Russians on their arrival.

The travelers then asked if they could see a western movie. The Americans obliged by screening "Hondo," starring John Wayne.

The Russians plan to repay the compliment tomorrow by cooking for the men of the American base, where nine scientists are carrying out research.

The commander of Operation Deep-Freeze, Rear Admiral David Tyree, sent a message to the Russians as they were approaching the polar base assuring them they would be accorded hospitality and any help they needed.

The leader of the Soviet expedition, Aleksandr Dralkin, replied in a message to Admiral Tyree's headquarters at Christchurch:

"Our sincere thanks for your kind message in connection with our arrival at the South Pole station. We found here a very warm hospitality from the members of the station."

The Russians were expected to spend about two days with the Americans before setting out on the last half of the most ambitious journey in the fifty-year history of Antarctic exploration.

The Soviet aim in a roughly right-angled journey from the Indian Ocean base of Mirny to the Atlantic coast at Lazarev in Queen Maud Land is to touch three southern poles—the Magnetic Pole, the Geographic Pole and the Pole of Inaccessibility, the point farthest from the Antarctic coasts.

The expedition touched the Magnetic Pole, where the Russians have established Vostock II base, on its way to the United States Amundsen-Scott Base at the Geographic Pole.

The remaining part of the trip covers 2,000 miles into the heart of the continent and out to the Atlantic Coast.

Touching the Sovietskaya base at the Pole of Inaccessibility, the expedition plans to link up with another party from the newly established Lazarev base for the last part of the trek.

The journey will be longest overland in Antarctic history—about 1,000 miles longer than the 1958-59 cross-continent expedition carried out by Britain's Sir Vivian Fuchs and New Zealand's Sir Edmund Hillary from the Weddell Sea on the Atlantic side to the Ross Sea on the Pacific side.

Apart from the journeys to the geographical pole by Sir Vivian and Sir Edmund, the only other overland treks were Raoul Amundsen's discovery of the pole in 1911 and Capt. Robert Scott's journey a few months later, in 1912.

The present Soviet expedition traveled on two specially built Kharkovchanka snow vehicles and one trail-breaking tractor, hauling metal sleds loaded with 400 tons of equipment and stores.

The Kharkovchanka tractors are 26 feet long and 13 feet wide. Each contains heated living quarters for eight men. They are equipped with kitchens, warm showers and foam-rubber armchairs.

Tass said the radio equipment in the tractors was powerful enough to contact Moscow and navigational instruments were so designed that the machines "cannot lose their way."

The expedition encountered rugged conditions even in the Antarctic Summer.

The tractors crossed 10,000-foot mountains and floundered in vast drifts of snow. The yard-wide tracks on the tractors often broke under the stress of the journey and had to be repaired.

Several sleds with fuel had to be abandoned to ease the strain on the hauling tractors.

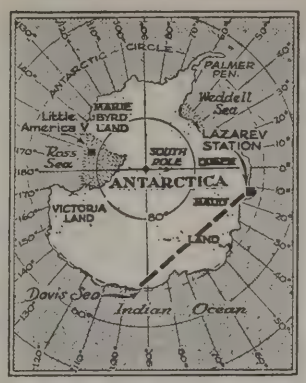
Planes supplied the expedition with stores and equipment and left caches at Komsomolskaya base, about 500 miles inland from Mirny, and at Vostock.

The chief scientific aim of the expedition is to help discover whether Antarctica, under its ice cap, is a solid land mass or a series of islands.

The expedition stopped about every 125 miles on the eighteen-day trip from Vostock to the Geographical Pole—a region never explored before—to take seismic soundings of the ice cap.

Tass said that "Soviet scientific circles emphasized the great value of the investigations made by the expedition, which yielded for the first time information on the thickness and structure of the ice cover and meterological and magnetic conditions in the central regions of the Antarctic.

Trans-Antarctic Route Reported by Russians



The New York Times Nov. 2, 1959

Broken line shows new route

LONDON, Nov. 1 (Reuters) — A new trans-Antarctic route from the Davis Sea to the Soviet coastal base of Lazarev has been charted by a Russian expeditionary plane, the Soviet press agency Tass reported today.

During the flight, observers discovered two groups of mountain peaks not marked on existing maps.

RUSSIANS TO RETURN TO ANTARCTIC BASE

LONDON, Dec. 28 (Reuters) —A Soviet Antarctic expedition that reached the United States South Pole station Saturday will return to its base instead of pushing on across the frozen continent.

The Soviet press agency, Tass, in a dispatch from the main Soviet base at Mirny, said the team would complete scientific observations at the Geographic Pole and "return to the Soviet Vostok station situated in the area of the South Magnetic Pole."

No reason was given for the change in plan.

The Soviet team's original target was to rest two days at the South Pole and then push on across the continent to Lazarev Base in Queen Maud Land. This would have taken it past the Pole of Inaccessibility, the point furthest from any Antarctic Coast, and would have been the longest trek on record.

The expedition touched the Magnetic Pole, where the Russians have established a base, on its way to the United States South Pole base.

A report from the American base, received in New Zealand earlier today, said the sixteen-man Soviet party intended dashing back along their 1,680-mile route from Mirny in two weeks.

A Russian supply ship is due at Mirny in two weeks and the party hoped to average 115 miles a day to return there in time.

MOSCOW, Dec. 29 (AP)—Sixteen Soviet scientists ended their three-day stay at the South Pole today and began the 1,680-mile trek back to their base at Mirny on the Indian Ocean's Antarctic coast, the Soviet press agency Tass reported. The Russians were entertained at the South Pole by American scientists stationed there.

NORTH, SOUTH POLES MOVED ON NEW MAP

WASHINGTON (Science Service)—The earth's two magnetic poles will be moved a little northward on a new map to be published early next year by the United States Navy's Hydrographic Office here.

Since the old isogonic map was published in 1955, the North Magnetic Pole, north of the Canadian mainland, apparently has moved about 100 miles due north across Viscount Melville Sound from Prince of Wales Island to a point just off the southwest tip of Bathurst Island.

The South Magnetic Pole will be shown near Adelie Coast, Wilkes Land, in Antarctica. Its new position will be about 100 miles north and west of the 1955 location.

Although some movement of the poles themselves is believed to have occurred, the apparent movement may be a result of better instrumentation for measurement, said J. H. Nelson, chief of the United States Coast and Geodetic Survey's geomagnetism branch.

The Coast and Geodetic Survey gatherers the data for these periodic Navy maps.

Officially the 1960 North Magnetic Pole will be shown at Lat. 74.9 degrees N. and Long. 101.0 W.; the South Magnetic Pole will be at Lat. 67.1 degrees S. and Long . 142.7 degrees E.

Spitsbergen Norwegian

Norway's possession of the coal-rich Spitsbergen Islands was ratified by international treaty in 1920.

Arctic Averages 30 Below

The average winter temperature in the Arctic is about 30 degrees below zero — cold enough to freeze salt water six inches thick in 24 hours.

NORWEGIANS LIMIT ANTARCTIC WHALING

The Norwegian government has approved a recommendation from the Whaling Council that Norway's quota for the 1959-60 Antarctic whaling season shall be limited to 5,800 blue whale units. One blue whale equals two fin whales, one and one-half humpbacks and six sei whales. Altogether eight Norwegian expeditions, one less than last season, will participate in the whale hunt, the Norwegian Information Service reported. They will use a total of seventy-seven catcher vessels, as against 100 during 1958-59, including seven vessels operating out of the Norwegian land station at Husvik Harbor.

The factory vessel Suderoy, and its six catcher vessels, which took part in last season's whaling, have been bought by the Norwegian Whaling Association and will not participate. Norwegian expeditions and the Husvik land station vessels will have a combined complement of 4,210 men, or 497 fewer than last season. Another 1,975 Norwegian whalers will be working for British and Argentine companies.

Also engaged in the Antarctic whaling this coming season are expeditions from four other countries, including six Japanese, three British, two Russian and one Dutch, plus two land stations—one British and one Argentine, using a total of 158 catcher vessels. There will be altogether twenty expeditions, the same as last season, assisted by 235 catcher vessels, as against 256 in 1958-59. While Norway has withdrawn the 11,000 ton Suderoy, the Soviet Union is sending its new 40,000 ton Sovietskaya Ukraina, accompanied by twenty catcher vessels.

WHALING FLEET ON WAY

Japanese Vanguard of Eight Ships Reaches Sydney

SYDNEY, Australia — The vanguard of a Japanese whaling fleet southward bound for the Antarctic has arrived here for supplies, according to the Australian News and Information Bureau.

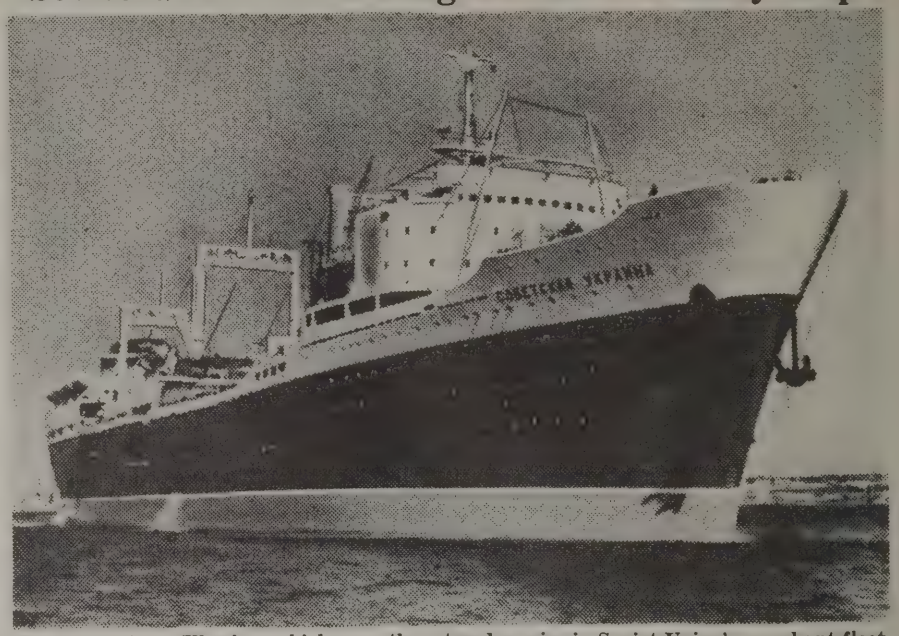
Half of the eight-vessel fleet berthed inside Sydney Harbor, and the other half anchored outside, a Radio Australia correspondent said.

All eight ships after refueling faced about ten days' steaming south of here to the whaling grounds. Japan plans to send twelve vessels, including a mother-ship, into Antarctic waters.

Good Whale Hunting

Modern whalers shoot forty to sixty whales in one day when the hunting is good.

Soviet Gets World's Largest Whale Factory Ship



The Sovietskaya Ukraina, which recently entered service in Soviet Union's merchant fleet

The world's largest whale factory ship the Sovietskaya Ukraina, has entered service in the Soviet Union's merchant fleet, it was reported Nov. 14

The ship, with displacement of 44,000 tons, is reported to be the largest vessel in the Soviet merchant fleet. Although its displacement tonnage is the same as the Dutch factory whale ship Willem Barendsz, built in 1955, the Soviet ship's other dimensions are larger.

The 711-foot vessel was designed to handle sixty-five whales a day or up to 4,000 a season. Whales are hauled aboard over a ramp in the stern. The ship's refrigerator holds have a capacity of 2,000 tons, and it has tanks capable of holding 18,000 tons of blubber.

The ship has accommodations for approximately 650 persons, including a crew of 500. All the cabins have air conditioning. It also has a large theatre.

The ship has a service speed of sixteen knots.

The keel for a second ship of the same type was laid last month (around Oct. 14) at the Nosenko Shipyard at Nikolayev in the Ukraine, where the Sovietskaya Ukraina was built.

WHALE DATA REVISED

Scientist Says Male Takes Much Longer to Mature

LONDON (Science Service)—A male whale takes twice as long to reach maturity as scientists had thought.

Previous estimates of this age, based largely on such things as counting the "rings" in whale bone or baleen, are in error, an Australian scientist reports here.

A study of two whales that had been marked several years ago has given scientists a "standard" for assigning whales a minimum age at maturity, W. H. Dawbin of the University of Sydney says. When they were re-examined recently it was possible to estimate maturity more accurately.

The minimum age for a mature male whale appears to be four years, the research says. The female may reach maturity earlier since the minimum age for that sex was estimated to be three years. With these ages as standards, researchers should now be able to use various organs for accurate estimations of a whale's age at maturity.

Cut Urged in Whaling Fleets

TOKYO, July 31 (Reuters)—The Japanese whaling industry has proposed a reduction in the whaling fleets of the five Antarctic whaling nations—Britain, the Soviet Union, Japan, Norway and the Netherlands. It suggested that the nations reduce their catcher craft by one ship each, it was learned today. The proposal is designed to curb competition, in view of the breakdown early this month of negotiations to fix catch quotas.

Two Quit Whaling Pact

LONDON, July 1 (Reuters)—The withdrawal of the Netherlands and Norway from the International Whaling Convention was officially announced here tonight.

A statement at the close of the eleventh International Whaling Commission meeting, which began on June 22, said the withdrawal of the two nations became effective yesterday.

Japan, however, after giving notice of withdrawal decided to rescind its action.

The statement added that the Netherlands and Norway had undertaken to abide by all the commission's regulations except the catch limit and, in the case of the Netherlands, the duration of the whaling season.

WHALE QUOTAS FILLED

Australia Announces Close of Season for Humpbacks

CANBERRA, Australia—Charles F. Adermann, Minister of Primary Industry, said here that the 1959 whaling season had officially ended for taking humpback whales in Australian waters from land-based stations on the eastern and western coasts and at Norfolk Island, according to the Australian News and Information Bureau.

East coast and Norfolk Island stations had taken and treated their combined maximum quotas of 960 whales, and west coast operators had achieved their maximum joint quota of 1,120 humpbacks, Mr. Adermann said.

Whale Brain Like Human's

A whale's brain is similar in shape to that of a human brain.

Antarctic Party Honored

Nov. 1,

The Union of South Africa's postal administration on Nov. 16 will release a 3-pence stamp with "SANAE" inscribed along the lower border. The word comprises the initials of the South African National Antarctic Expedition, and the stamp will hail that scientific journey. The expedition will depart on Nov. 28 from Cape Town for an Antarctic base.

The horizontal design presents a world globe tilted so as to show an outline map of South Africa and the polar area below it. Between the two is a dotted line indicating the approximate course to be followed by the adventurers. At left of the globe, "South Africa" is inscribed in Afrikaans and English.

When Alaska early this year became the 49th state of the United States a seven cents airmail stamp was issued featuring a map of the territory.

Collecting map stamps is

an interesting sideline of philately, for the maps tell a story, not only of the country's location, but often with historical and political background.

Map stamps have been released by many countries and island countries to feature their outline.

There are map stamps issued to emphasize a claim to territory. Argentina has issued a number of stamps featuring a map of South America, with its territory clearly outlined. In 1935 these stamps showed also the Falkland Islands off the coast of Argentina as belonging to the republic. Governed as a British colony, Great Britain protested about these stamps showing the Falkland Islands under Argentine rule. The next year Argentina re-issued the map stamp, this time without claim to the group of islands.

In the past few years a number of countries have issued map stamps showing their claims to Antarctic territory. Chile, Argentina, New Zealand, and Australia lay claim to sections of the Antarctic continent, as extensions on the sector principle of their own territory. Great Britain, United States, France and Russia have done exploration on the Antarctic continent, especially during the recent International Geophysical Year, and the last three have issued stamps showing the area occupied. France and New Zealand have even issued stamps for new postal territories with maps shown on the stamps for French Southern and Antarctic Territories, and New Zealand for the Ross Dependency.

Australian Antarctic Territory Stamps — Four new definitive stamps will be added to the Australian Antarctic Territory series

The first adhesive of the series, of 2/- denomination, was issued in 1957. The further stamps will be of the values of 4d, 7d, 1/-, and 2/3. They will be valid for postage in Australia as well as in the Territory.

Initially the four stamps will be available at all post offices in Australia for approximately two weeks. Following cessation of post office sales, they will remain current as part of the series for regular use in Australian Artarctic Territory and will continue to be available at the Department's philatelic sections in all states.

It will not be practicable however, to place the stamps on sale at Australian post offices at Macquarie Island and in Australian Antarctic Territory, until the 1959-60 relief expeditions reach the various stations.

The 4d will be of the same size as the current 2/- flannel flower stamp. It will picture Edgeworth David, Douglas Mawson and A. F. McKay, members of the Shackleton Expedition of 1908-09, who were the first to reach the South Magnetic Pole.

The other three will be of the same size as the current 7d Royal Flying Doctor Service stamp. The 7d design will depict an ANARE weasel and team and a map of the Antarctic continent.

On the 1/- will be shown a sled and dog team with an iceberg in the background. The 2/3 design will include a map of the Antarctica and emperor penguins.

ANTARCTICA HELD 'SUNNIEST' PLACE

Russian Weather Men Say Rays Lack Heat Because of Angle to Surface

WASHINGTON, (NANA) — The sunniest spot on earth is neither the Sahara nor the Sudan but the frozen continent of Antarctica.

Soviet meteorologists, after nearly three years of daily measurements at the bottom of the world, report that at a height of 12,000 feet on the "ice cupule" of Antarctica the intensity of solar radiation is 1.81 calories a square centimeter a minute.

This is the greatest intensity ever recorded anywhere on earth, the Russians assert.

"By contrast," says the report, "it may be noted that in the temperate zones the intensity is only a little more than one calorie a square centimeter a minute. However, the Antarctic sun does not produce much heat since its rays hit the surface at an acute angle. Ultraviolet radiation also is very high in Antarctica because the air is clear and there are many sunny days."

The scientists also say they established that the extremely low temperatures of Antarctica are restricted to a relatively thin layer of the atmosphere about 2,000 to 3,000 feet thick. Above this layer the air warms up by as much as 35 degrees. This phenomenon is called the surface inversion.

"Therefore," says the report, "the air masses moving from Antarctica to the Equator do not generally have as low a temperature as might be expected.

"Preliminary estimates also show that the energy of the atmospheric circulation in the southern hemisphere is transferred to the northern hemisphere. This fact is very important for development of methods of long-range weather forecasts.

RUSSIA—Soviet scientific bases in the Antarctic are marked by red stars on a 40-kopec blue stamp commemorating International Geophysical Year activities.

In addition to the main Russian base at Mirny the map indicates a station at the Pole of Inaccessibility, East Station and Lazaren Station.

Second Chilean IGY Stamp Completes Set

The previously announced Chilean sets noting the 1557 Juan Landrillero expedition and the Barros Arana death anniversary appeared as scheduled on August 28, according to Guillermo Preuss, Casilla 3794, Santiago, Chile.

The same date also brought the second and final value of the nation's IGY set, a 50 Peso green showing the Antarctic area. The 40P. low value appeared in December of last year.

Rev. Tom Cunningham Is Dead; Priest in the Arctic of Alaska

POINT BARROW, Alaska, Sept. 4 (AP)—The Rev. Tom Cunningham, "the parish priest of the Arctic," died of a heart attack yesterday in his cabin at this northernmost tip of the United States. His age was 53.

Father Cunningham's death ended twenty-five years of missionary work in the largest Roman Catholic parish in the United States—150,000 square miles of ice and tundra above the Arctic Circle.

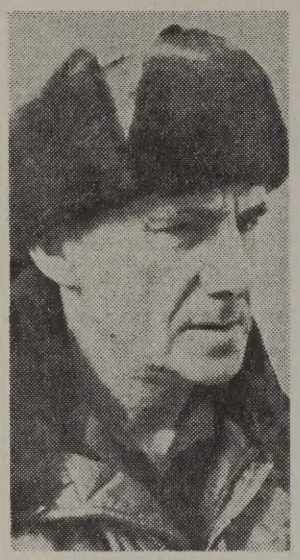
Last November Father Cunningham and twenty others were rescued from a windswept Arctic ice island that had broken up in a polar storm. The Jesuit priest, an authority on ice conditions, had chosen the ice floe at the request of the Alaskan Air Command for use by scientists carrying out International Geophysical Year studies.

Father Cunningham, a native of New Zealand, came to Alaska in 1934. He first served on Little Diomede Island, then established missions at Teller and Nome before coming here.

In visiting his far-flung parishioners, Father Cunningham often traveled as much as 2,500 miles by dog sled.

Father Cunningham was born of Irish parents. He entered the Jesuit order in Australia, studied in Europe, Montreal and California, and volunteered for Arctic missionary duty. He enlisted for chaplain's duty in World War II and the Army Air Forces set him to teaching Arctic survival to pilots.

He became one of the world's few experts on the behaviour of pack ice, by joining in hazardous scientific expeditions on ice floes 20 miles of shore in the Arctic Ocean. The knowledge he obtained came by camping with Eskimos on ice packs as



The Rev. Tom Cunningham

they went on hunting expeditions. By living the Eskimos' life and mastering their language he won their respect.

Journeying with the Eskimos in their umiaks, or walrus-skin boats, he traveled throughout the barren areas. In the spring of 1938, he was on a hunting trip with Diomede Eskimos in a skin boat that was caught in ice and forced to land on Big Diomede Island, a Russian possession.

The Russian customs official promptly arrested him for trespassing on Russian soil. Father Cunningham won his release by filling out a questionaire that was in Russian. He gave his answers in Gaelic.

Dr. John Oliver La Gorce

WASHINGTON, Dec. 23 — Dr. John Oliver La Gorce, eighty, former president of the National Geographic Society and editor of "The National Geographic Magazine" from 1954 through 1957, died at his home today after a long illness.

As evidence of his work and writings in this field, there are a mountain, a lake and a glacier named after him in Alaska, and a mountain range and a peak bearing the same name in Antarctica. He also held the title of Postmaster of Little America, Antarctica, an office to which he was appointed in 1933 in connection with the Byrd Antarctic Expedition. The expedition carried with it thousands of letters for cancellation at the southernmost United States postoffice in the world.

BYRD STATUE PLANNED

Site to Be Near Arlington, Where Admiral Is Buried

WASHINGTON, Dec. 29 (AP) —An eight-foot statue of the late Admiral Richard E. Byrd will be placed on the Virginia side of the Potomac River near the main entrance to Arlington Cemetery.

Admiral Byrd, a native Virginian, lies in the cemetery. He was buried there March 14, 1957, honored as the first man to fly over both Poles.

The Virginia location was determined in part, however, by the fact that Washington is running short of good sites for statues.

The National Geographic Society is underwriting the cost of the memorial. The sculptor is Felix de Weldon, who has finished a plaster model. The statue will be cast in bronze.

Walrus Statistics

A full-grown walrus will measure ten or eleven feet and weigh more than a ton.

Brig. Gen. Paul V. Kane Dead

FOREST GROVE, Ore., July 3 (AP)—Brig. Gen. Paul V. Kane, U. S. A., who commanded artillery units that helped to capture the famed Remagen Bridge in Germany in World War II, died here Wednesday. He was 66 years old. Death was attributed to a heart attack.

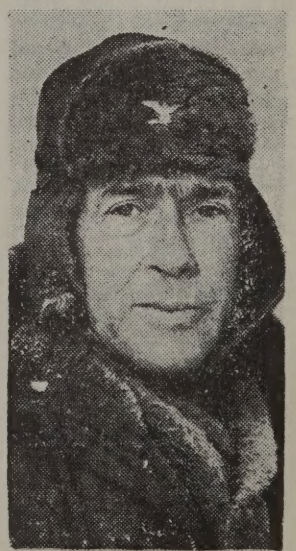
General Kane retired ten years ago. He served in North Africa before helping to take the Remagen Bridge, which gave the Allies their gateway across the Rhine.

A native of Worcester, Mass., General Kane graduated from the United States Military Academy in 1916.

Led Cold Weather Tests

In 1947, General Kane, then a colonel, commanded Task Force Frigid, which conducted special cold weather tests of men and equipment in Alaska and the Aleutians.

One of the conclusions he reached was that men function better in the deep cold of the Alaskan winter than do machines. "No single piece of equipment endured it so well as the G. I.," he reported.



Paul V. Kane in Alaska in 1947. He was colonel then.

He was promoted to brigadier general in April, 1948.

Capt. Peter Wold, Mapped Straits Of Bering Sea

SAN DIEGO, Calif., Dec. 12 (AP)—Capt. Peter H. Wold, ship's master who rescued Father Hubbard, the glacier priest, in the Shelikoff Strait in 1931 and mapped the Bering Strait, died in a hospital Thursday. He was 77 years old.

In 1937 Capt. Wold set up the first regular mail service from Seward, Alaska, to the Aleutian Islands. He operated it for five years. At the request of the Secretary of the Navy, Capt. Wold did the plotting and graphing of the Bering Sea area.

He was the first civilian to enter Dutch Harbor after the bombing by the Japanese in World War II.

Survivors include his widow, Carrie, and a son, Peter Jr.

REV. COLIN MONTGOMERY

Brother of Viscount Dead in South Africa at 58

VRYBURG, South Africa, Aug. 29 (Reuters) — The Rev. Colin Roger Montgomery, brother of Viscount Montgomery of Alamein and rector of St. Stephen's Church here, died last night while officiating at a boxing match. His age was 58.

Canon Montgomery had been rector of the Vryburg Anglican Church for the last seven years. From 1948 to 1952 he was Canon of The Arctic, stationed at Aklavik in Canada's Northwest Territories. Earlier he had been Vicar of Ladysmith, Natal, for two years.

HONOR PROVES EMPTY

Antarctic Range Named for Briton Found Not to Exist

A British admiral and Arctic explorer of the early nineteenth century, Sir William Edward Parry, was honored in 1841 by having an Antarctic mountain range named for him, which was later found not to exist, according to Arctic, journal of the Arctic Institute of North America.

The most important geographical feature now bearing his name is the Parry Islands in the Canadian Arctic archipelago.

Map of Eskimos

HANOVER, N. H. (UPI)—A map showing the distribution of Eskimos in North America has been completed at Dartmouth College. It shows that many Eskimos have become skilled workers for the U. S. and Canadian Governments and that their native settlements are disappearing.

Pursuit of Knowledge Led to the Ends of the Earth

90° SOUTH. The Story of the American South Pole Conquest. By Paul Siple. Illustrated. 384 pp. New York: G. P. Putnam's Sons. $5.75.

By TREVOR LLOYD

THE NEW YORK TIMES BOOK REVIEW

"POLAR exploration," Sir Hubert Wilkins once said, "is 90 per cent shoveling snow." Paul Siple's dramatic story of building and operating the first settlement at the South Pole in 1957 demonstrates that flying Globemasters, diesel-bulldozers and electronic aids have changed the essentials little if at all. On this, the author's sixth Antarctic expedition, he confirmed the virtue of sheer hard physical labor. Jack Tuck, the senior though youthful naval officer explains in his foreword, Siple's "was always the first shovel to swing and the last to be set down."

The eighteen men who first wintered at 90° South (a very select street address) dug a snow tunnel a thousand feet long and seven feet high to provide a sheltered passageway from the main camp to a scientific outpost. This done they set to work to meet the insatiable demands of the domestic water supply and the scientific need to study the layers of snow and ice beneath them, by excavating a sloping cavern, having all the appearances of a Siberian salt mine, which reached down ninety feet by the end of the first winter.

"90° South" is in part autobiography, which follows the author's career from his days as a Sea Scout on the shores of Lake Erie through increasing responsibilities on Antarctic expeditions and a busy life as a defense scientist to direction of scientific research at the South Pole station. The book tells for the first time much of the inside story of Admiral Richard E. Byrd's long campaign to keep alive United States interest in polar exploration. The author accompanied Byrd on five expeditions to the Antarctic—the first time as a Boy Scout with the Byrd party in Little America, 1928-1930. It was Byrd who wanted a base established at the South Pole itself during the International Geophysical Year and who suggested that Paul Siple be scientific leader of this expedition.

The admiral appears as a far-seeing, capable, devoted and often long-suffering polar pioneer, whose chosen opponent was the Antarctic, but who seldom lacked for others nearer home, particularly in administrative Washington. Mr. Siple has interwoven with his main story—which he tells in a sturdily forthright manner—a veritable handbook of Antarctic operations, packed with the know-how assembled during thirty years of experience.

To establish a South Pole scientific station for the International Geophysical Year, lasting from mid-1957 to the end of 1958, called for elaborate long-range planning, transportation of equipment, supplies and men by way of New Zealand, and construction of an operations base on the Ross Sea coast of Antarctica. Although basically a civilian scientific undertaking, transportation and "housekeeping" were to be provided by Naval Task Force 43, while men and materials were to be lifted the last difficult 850 miles to the Pole by the Air Force.

The first winter at the South Pole was of course expected to be very cold, how cold no one knew. The author anticipated a minimum of 120 degrees below zero, so there was some disappointment among the group when nothing lower than 102 below was recorded—although this was a world record. A photograph showing three men at an outdoor wiener roast in 70 below zero weather emphasizes that this expedition did not "retire to winter quarters" but kept its elaborate scientific program going throughout the long polar night. Even when the tractors could not be used because of the extreme cold, the men—scientists and naval personnel alike—remained busy indoors and out and were apparently none the worse for the experience.

Polar expeditions, often cooped up in crowded quarters during a long winter, are proverbially subject to outbursts of ill-feeling which by mutual consent is rarely referred to in published accounts. There is good reason to believe, however, that the 1957 group was exceptionally harmonious. This may have been because Mr. Siple was determined to discuss as frankly as possible such personal frictions as arose and to take steps to remove them.

By age and experience he was the natural leader in such matters, but he allowed the others a voice in making decisions whenever possible. He writes "We had to solve our own problems. No one else could." And when the men themselves overcome minor difficulties that threatened the even tenor of their way, it was largely because of his conviction that "One should never underestimate mankind. Even at the ends of the earth."

Despite recent scientific achievements in Antarctica, the author believes that United States interests in this area of growing world significance can now be better safeguarded by a new type of organization. He suggests creation of a semi-private institute for polar research, possibly as a memorial to the late Admiral Richard E. Byrd. Whatever policies may be followed (and this book provides ample ammunition for those urging a change), this country is fortunate to have available Mr. Siple's unequaled first-hand experience.

Mr. Lloyd, Professor of Geography at McGill University, has written extensively on the history of polar exploration.

People Of the Deer

THE DESPERATE PEOPLE. By Farley Mowat. Woodcuts by Rosemary Kilbourn. 305 pp. Boston: Atlantic—Little, Brown. $4.50.

By WALTER O'HEARN

CANADA'S angriest young man is Farley Mowat, who writes out of a desperate concern for the vanishing Eskimo. At 38, Mr. Mowat is past youth's first blush, but he has kept his anger intact; it has been warming in a steady flame since he was 27, when he first encountered the Ihalmiut, a tribe of inland Eskimos.

The Ihalmiut were a dying people in 1947. Our strange first gifts, borne through chance encounters with traders, were disease and indigestible ways. The failure of the deer, the desperate change to a trapper economy had reduced their once proud hundreds to forty-nine survivors. Mr. Mowat has told some of this in his earlier book "People of the Deer." Last year, with military penetration and bureaucratic muddle added to their woes, the People of the Deer, the proto-Eskimo, were no longer a dying tribe. Only a handful were left. Soon they will have vanished.

Mr. Mowat's anger is honest; it is understandable. In rich words, whose poetry only rarely spills over to become rhetoric, he has built a solid emotional case. The Deer People, who breed leaders and rivalries worthy of a great empire, were fascinating and a writer's understanding made them lovable. Their lives and deaths were tragic, because they were heroic. They were never degraded into pathos.

WHEN the author takes off to indict the whole Canadian approach to the Eskimo problem, he may be on more dubious ground. "We Canadians looked askance at the South African exponents of *apartheid*," he writes, "at the segregationists in the southern United States; and we gazed with holy horror upon the inhumanities which we were told were being perpetrated upon primitive people under the rule of communism. Indeed, we looked virtuously in all directions; except northward into our own land."

How can a reviewer who has never seen an Eskimo confront this indictment? By noting, perhaps, that Canadians recently have shown a desperate if muddled concern for the northern aborigine. By observing—as Mr. Mowat himself observes—that authorities on Northern affairs have taken issue with him. By conceding something he virtually admits, an anti-missionary, anti-government bias.

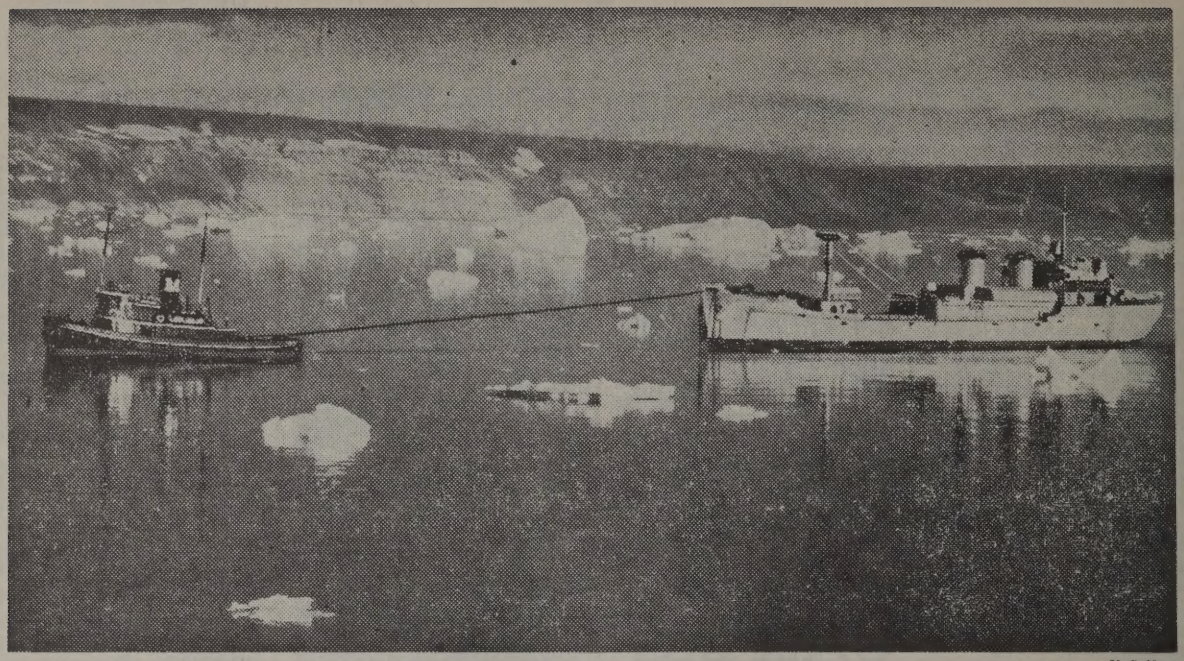
Nevertheless if we are at last fumbling toward a grasp of the Eskimo problem, the goading of Farley Mowat is one of the reasons. He has convictions and he can express them in prose that sears the conscience.

Mr. O'Hearn is managing editor of The Montreal Star.

MEN OF ANTARCTICA, by Gerald Bowman (Fleet Publishing Corp., $3.95). Profiles of Robert Falcon Scott, Roald Amundsen, Ernest Shackleton, Admiral Richard E. Byrd, Dr. Vivian Fuchs and Sir Edmund Hillary.

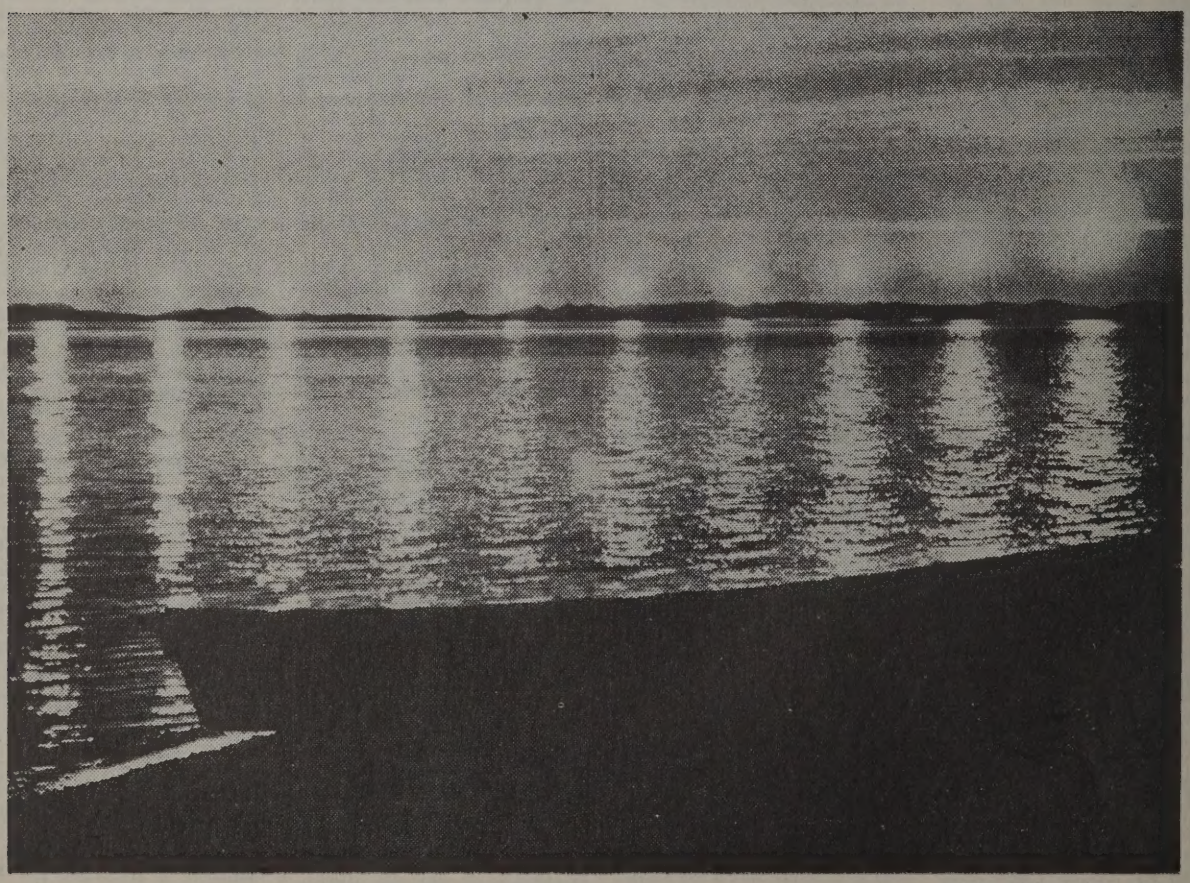
AMERICA IN THE ANTARCTIC TO 1840, by Philip I. Mitterling (University of Illinois, $5). History.

IN QUEST OF THE NORTHWEST PASSAGE, by L. H. Neatby (Crowell, $4.50). About exploration.



U. S. Navy

SAFE IN FROM THE SEA: The Navy's power plant YFP-10 in North Star Bay, Thule, Greenland, with tugboat Edmond J. Moran, which towed her from here. The YFP-10 does not have self-propulsion, but is a floating power station, assigned to provide electricity for Ballistic Missile Early Warning System. Her voyage, arranged by the Military Sea Transportation Service, took sixteen days, and covered 3,000 nautical miles without difficulty.



Alaska Visitors Assn. Photo

MIDNIGHT SUN IN ALASKA—These multiple exposures over a two-hour period show how the midnight sun dips to the horizon in Alaska but does not set during the long summer days. The sun remains above the horizon for 84 days a year at Point Barrow and for 36 days at Kotzebue. The silrouette in the foreground is that of an oomiak—a large Eskimo boat made of walrus skin.